

THE
YUKON TERRITORY

ITS HISTORY AND RESOURCES

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Canada

Yukon territory

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THE YUKON TERRITORY

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YUKON TERRITORY

ITS HISTORY AND RESOURCES

Canada. Dept. of the Interior

*Issued by direction of
The Hon. Frank Oliver, Minister of the Interior, Ottawa*

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1907

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UNIVERSITY OF CALIFORNIA

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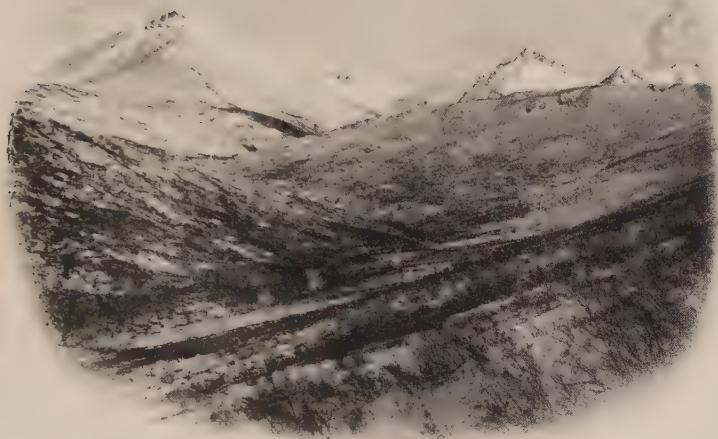
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PREFACE.

In the preparation of this pamphlet subjects of general interest, including all the economic resources which have so far been discovered or profitably utilized in the Yukon Territory, have been classified for easy reference. Though the principal object in view is to present up to date information, yet an effort has been made to trace clearly and concisely the opening up of what was known as the Yukon District, and the gradual development of the mining industry. Facts, derived from the best available sources, have been presented, and an attempt has been made to convey to the reader an accurate and comprehensive account of existing conditions in the Territory.

To this has been added much useful information upon the different methods of mining followed in the Territory, and also a synopsis of the regulations in force governing the disposal of lands and minerals.

OTTAWA, September 1, 1907.



CHAPTER 1.

HISTORICAL SKETCH.

In the extreme northwest of Canada and as far removed as possible from the early settlements on the Atlantic seaboard, is a vast triangular-shaped tract of territory, which, until the early forties, had not been penetrated by the undaunted traders of the Hudson's Bay Company. This, at that time unknown territory, is bounded on the south on the northern line of the province of British Columbia (latitude 60), at a point on the extreme southwest by a part of the littoral belonging to the United States Territory of Alaska, on the west by the eastern line of the Territory of Alaska, on the north by the Arctic Ocean and on the east by the 136th meridian and the northern ranges of the Rocky Mountains. The Yukon Terri-

tory contains, approximately, an area of 196,976 square miles, 649 square miles of which is covered by water.

ROBERT CAMPBELL, THE FOUNDER OF FORT SELKIRK, 1838-1848.

In 1838 one Robert 'Campbell, in the service of the Hudson's Bay Company, had established a trading post at Dease Lake, about ninety miles south of the boundary line between the territory above defined and the province of British Columbia. Dease Lake post was abandoned in the following year, and Campbell was commissioned by Sir George Simpson, who was then the resident Governor of the Hudson's Bay Company, to explore the north branch of the Liard to its source and to cross the height of land in search of any river flowing to the westward.

Mr. Campbell writes: 'In pursuance of these instructions, I left Fort Halkett (on the lower Liard) in May, with a canoe and seven men, among them my trusty Indians, Lapie and Kitza, and the interpreter Hoole. After ascending the stream some hundreds of miles, far into the mountains, we entered a beautiful lake, which I named Frances lake, in honour of Lady Simpson. Leaving the canoe and part of the crew near the southwest (sic) extremity of this (west) branch of the lake, I set out with three Indians and the interpreter. Shouldering our blankets and guns, we ascended the valley of a river, which we traced to its source in a lake ten miles long, which, with the river, I named Finlaison's lake and river.'

From this point Dr. G. M. Dawson says, 'Mr. Campbell struck across to the Pelly, which he then named in honour of Sir H. Pelly, a governor of the company.'

While Campbell was exploring this part of the Pelly, the members of his party, whom he had left at Frances lake, had built a house between the two arms of the lake and established a post which was named Fort Frances. In 1842 a fort was constructed at Pelly banks, and in June, 1843, Campbell,

accompanied by two French Canadians and three Indians, descended the Pelly to its confluence with a river which Campbell called the Lewes. At this point there was a large camp of Wood Indians, who told Campbell alarming stories of the numerous savage tribes on the lower river. Campbell decided to return to Pelly banks until he could obtain more reliable information of the numbers and character of the people north of the confluence of the Lewes and Pelly. From information obtained by hunting parties, who were sent down the Pelly to obtain provisions and trade with the Indians, Campbell was convinced that the danger was not so great as the Indians would have him believe, and early in June, 1848, he again descended the Pelly, and established Fort Selkirk at the confluence of the Pelly and Lewes rivers.

In 1842 Mr. J. Bell, who some years later was in charge of the Hudson's Bay post on Peel river, had descended the Porcupine for a considerable distance. In 1846 he again descended the Porcupine to its mouth, and saw the great river, which the Indians in the vicinity called the Yukon. In the following year Fort Yukon was established at the mouth of the Porcupine by Mr. A. H. Murray, who was also in the service of the Hudson's Bay Company.

In 1850, Campbell descended the river from Fort Selkirk to Fort Yukon, and thus proved beyond all doubt that the Pelly and Yukon rivers were identical from Fort Selkirk to the mouth of the Porcupine. On this trip Campbell ascended the Porcupine and returned to Fort Simpson by way of the Mackenzie.

Some seven or eight years before the establishment of Fort Selkirk it appears that the Russians had been exploring inland from the mouth of the Yukon, as the following facts ascertained by Dr. Dawson will show: 'The estuary of the Yukon appears to have been first explored by the Russian, Glasunoff, in 1835 to 1838, and the river was then named by the Russians

the Kwikhpak, which name according to Mr. W. H. Dall, is in reality that of one of the channels by which it issues to the sea. The lower part of the river, however, continued to be known under this name for a number of years, and it is so called on the (Russian) map of Lieut. Zagoskin, made from reconnaissance surveys which, in 1842-43, he carried up as far as Nowikakat.'

DESTRUCTION OF FORT SELKIRK, 1852.

After Campbell had completed the great circuit of the Pelly-Yukon-Porcupine-Mackenzie route, he returned to Fort Selkirk, which was rapidly becoming a most important trading post on account of its central location in the hunting grounds of the different tribes of Indians on the Lewes, Pelly and Yukon. The traders seem to have been on friendly terms with the Indians in the vicinity of Selkirk, but there is no record of Campbell or any of his party ever having, up to this time, ascended the Lewes river to any great distance or traded with the Indians in the regions nearer the coast. About this time an unfortunate disaster happened to Fort Selkirk, which misfortune seems to have closed Campbell's career in the Yukon.

Dr. Dawson presents the facts as follows:—

'The several ruined chimneys of Fort Selkirk still to be seen, with other traces on the ground, are in themselves evidence of the important dimensions and careful construction of this post. The establishment consisted, I believe, in 1852, of one senior and one junior clerk and eight men. The existence of this post in the centre of the inland or "Wood-Indian" country had, however, very seriously interfered with a lucrative and usurious trade which the Chilcoot and Chilkat Indians of Lynn Canal, on the coast, had long been accustomed to carry on with these people; acting as intermediaries between them and the white traders on the Pacific and holding the passes at the headwaters of the Lewes with all the spirit of robber barons of old. In 1852 rumour was current that these people meditated a raid upon the post, in consequence of which the friendly local Indians stayed by it nearly all



Gold Run Creek.

summer of their own accord. It so happened, however, that they absented themselves for a couple of days, and at that unlucky moment the coast Indians arrived. The post was unguarded by a stockade, and yielding to sheer force of numbers the occupants were expelled and the place was pillaged, on the 21st August. Two days afterwards Campbell, having found the local Indians, returned with them and surrounded the post, but the robbers had flown. Being now without means of support for the winter, Campbell set off down stream to meet Mr. Stewart and the men who were on the way back from Fort Yukon. He met them at the mouth of White river, and after turning them back with instructions to arrange for wintering at Fort Yukon, set out himself in a small canoe up the Pelly river, crossed to Frances lake, descended the Liard and arrived at Fort Simpson with the tidings of the disaster, amid drifting ice, on the 21st of October.

‘Being anxious to obtain Sir George Simpson’s permission to re-establish Fort Selkirk, Campbell waited only until the river froze, when he left Fort Simpson on snowshoes, and travelled overland to Crow Wing, in Minnesota, where he arrived on the 13th of March. On the 18th of April he reached London, but was unable to obtain from the directors of the company the permission he desired.

‘In the autumn of 1853 one of Campbell’s hunters arrived at Fort Halkett, on the lower Liard, by way of the Pelly and Frances. This is the last traverse of Campbell’s portage of which I can find any record, though it may doubtless have been used by the Indians subsequently. From this man it was learnt that the buildings at Fort Selkirk had been all but demolished by the local Indians for the purpose of getting the ironwork and the nails. He also stated that the Chilkats, being unable to carry away all their plunder in the preceding year, had taken merely the guns, powder and tobacco. They had cached the heavier goods, which were afterwards found and appropriated by the local or Wood Indians.’

This remarkable journey, which was made by Campbell from Fort Selkirk to London, a distance of about 9,700 miles, over three thousand of which he travelled on snowshoes in the dead of winter through a practically uninhabited wilderness, is a splendid testimony of the intrepid spirit and determined

character of those adventurous traders and explorers, whose unostentatious yet energetic services in the cause of commerce have done so much to open up to civilization the vast natural resources of the great Northwest. To undertake such a journey at that season of the year would indicate the importance from a commercial standpoint which Campbell attached to the trading post at Selkirk, and it must have been a great disappointment to him when the directors of the company refused to re-establish the fort. Upon his return, he took charge of the Athabaska district, where he remained until 1863, when he was appointed to the company's post at Swan River. He left the service of the Hudson's Bay Company in 1872, having been in its service forty years, and in 1880 removed to Strathclair, Manitoba, where he died in 1894.

In 1869 the Hudson's Bay Company's officer was notified to leave Fort Yukon by the United States government officers, as it had been ascertained that this post was situated within United States territory. A post was then established at Rampart House, but in 1890 Mr. J. H. Turner, of the United States Coast Survey, found that this new post was also in United States territory, and in the following year the Hudson's Bay Company established a post twenty miles further up the Porcupine.

FIRST GOLD DISCOVERY.

In 1869 'minute specks of gold' had been found in the Yukon by some of the Hudson's Bay Company's men.

In 1873 one Arthur Harper and a party left British Columbia to prospect on several rivers in the Yukon Territory, and the result of this prospecting was summed up by Harper in a conversation with Mr. Ogilvie as follows: 'Nothing on the Nelson, prospects on the Liard, nothing on the Mackenzie, good prospects on the Peel, some on the Porcupine, and prospects everywhere on the Yukon.' Harper and his party



Moose hunter with 1,300 lb. of game.

prospected for some distance up the White river, but not being successful they descended the river to St. Michaels, where some of them entered the service of the Alaska Commercial Company, then trading in the valley.

‘The Alaska Commercial Company for many years subsequent to the retirement of the Hudson’s Bay Company had a practical monopoly of the trade of the Yukon, carrying into the country and delivering at various points along the river, without regard to the international boundary line or the customs laws and regulations of Canada, such articles of commerce as were required for the prosecution of the fur trade, and latterly of placer mining, these being the only two existing industries. With the discovery of gold, however, came the organization of a competing company known as the North American Transportation and Trading Company, having its headquarters in Chicago and its chief trading and distributing post at Cudahy. This company has been engaged in this trade for over three years, and during the past season despatched two ocean steamers from Seattle to St. Michaels, at the mouth of the Yukon, the merchandise from which was at the last mentioned point transhipped into river steamers and carried to points inland, but chiefly to the company’s distributing centre within Canadian territory. Importations of considerable value, consisting of the immediately requisite supplies of the miners, and their tools, also reach the Canadian portion of the Yukon district from Juneau, in the United States, by way of the Dyea inlet, the mountain passes and the chain of waterways leading therefrom to Cudahy. Upon none of these importations had any duty been collected, except a sum of \$3,248.80 paid to Inspector Constantine in 1894 by the two companies mentioned above, and it is safe to conclude, especially when it is remembered that the country produces none of the articles consumed within it except fresh meat, that a large revenue was being lost to the public exchequer under the then existing conditions.’ (Extract from report of Deputy Minister of Interior, 1895.)

Dr. Dawson states that the first white man who crossed from the coast to the headwaters of the Lewes was one George Holt, who did some prospecting in 1878.

In 1880 a party of nineteen men organized at Sitka,

crossed the Chilkoot pass to Lake Lindeman, and descended the Lewes to the mouth of the Hootalinqua, which they descended for some distance.

In 1881 a party of four miners crossed the Chilkoot pass and descended the Lewes as far as the mouth of Big Salmon. This party ascended the Big Salmon, and found gold in the river bars along the course of the stream.

In 1882 two prospecting parties ascended the Pelly to Hoole cañon.

In 1885 mining was commenced on the Stewart river, and in 1886 the greater part of the mining population was mining on this stream, as much as \$100 a day being made to the hand.

In 1886 Cassiar bar, 27 miles below Hootalinqua, was discovered, and actively worked the same summer. In the same year coarse gold was discovered on the Fortymile river, about $23\frac{1}{2}$ miles from its mouth and near to the boundary line. In 1887 it was estimated that about 250 miners were working in the Yukon, 200 being on Fortymile creek and 50 prospecting and mining on the upper Yukon and its tributaries.

In 1887 an expedition was organized by the government to explore that portion of the Northwest Territories which was drained by the Yukon river. This expedition was placed in charge of Dr. G. M. Dawson. To Mr. William Ogilvie was assigned the work of conducting instrumental measurements and astronomical observations in connection with the determination of the position of the 141st meridian which, by the Treaty of St. Petersburg, is designated as the boundary line from the vicinity of Mount St. Elias to the Arctic ocean.

Dr. Dawson entered the interior by the Stikine, Telegraph creek and Dease lake, which is practically the same route covered by Campbell in 1840, nearly fifty years before. He ascended the Frances river and crossed Campbell's portage to the headwaters of the Pelly, which he descended to Fort Selkirk. He then ascended the Lewes, crossed the Chilkoot pass

and reached the coast at the head of Lynn canal. Dr. Dawson's report of his exploration, in 1887 throws a flood of light on the country through which he traversed. He gives an excellent description of the Pelly river and its tributaries, and also a full description of the geological and general features of the country.

In the same year Mr. R. G. McConnell commenced at the confluence of the Dease and Liard, and made an extensive survey of the Mackenzie valley to Fort McPherson. McConnell



then crossed to the Porcupine, the course of which he followed to its confluence with the Yukon, which he ascended to the site of old Fort Selkirk.

Dr. Dawson, writing of the geographical data obtained and the length of route travelled by Messrs. Ogilvie, McConnell and himself, says: 'Mr. Ogilvie's instrumentally measured line from the head of Lynn canal to the intersection of the Yukon or Pelly by the 141st meridian, will form a sufficiently

accurate base for further surveys. In addition to this, we now have an instrumental survey of the Stikine from its mouth to the head of navigation (Telegraph creek), which is connected with Dease lake by a carefully placed traverse. This is continued by a detailed running or track survey following the lines of the Dease, Upper Liard and Pelly rivers, and connecting with Mr. Ogilvie's line at the mouth of the Lewes, the total distance from the mouth of the Stikine to this point, by the route travelled, being about 944 miles. Adding to this the distance from the mouth of the Lewes back to the coast at the head of Lynn canal (377 miles) the entire distance travelled by us during the exploration amounts to 1,322 miles.'

DISCOVERY OF THE KLONDIKE GOLD-FIELDS.

In 1894 Robert Henderson and two other miners prospected the gravels at the mouth of the Pelly, where they rocked out \$54.00 in fine gold. They came down to the mouth of Indian river, which Henderson ascended alone, and prospected on Quartz and Gold Bottom. Having found good prospects on Gold Bottom, Henderson and a party of five returned to this creek in the spring of 1895, staked claims and commenced to work. During the summer of 1896 Henderson prospected on Gold Bottom Creek, eventually made a trip to Ladue's trading post at Ogilvie to obtain supplies, and returning to Gold Bottom by way of the Klondike river, he came upon a number of Indians fishing in the Yukon river at its confluence with the Klondike. Living with the Indians was one George W. Carmack, whom Henderson invited to stake on Gold Bottom. A few days afterwards Carmack and two Indians arrived at Gold Bottom, and staked claims near to where Henderson and his party were working. Returning across the divide by way of Bonanza, Carmack and the two Indians did some prospecting, and found rich prospects on what is now Discovery Claim on Bonanza creek. Carmack staked Dis-

covery and No. 1 below; 'Charlie,' an Indian, No. 2 below, and 'Tagish Jim,' the other Indian, No. 1 above. Before leaving Gold Bottom, Carmack told Henderson that he would send an Indian to inform him if rich prospects were discovered. Carmack, however, did not fulfil his promise, and he and the Indians at once proceeded to Fortymile, which was the recording office at the time, and filed their applications with Inspector Constantine. Up to this time the majority of the miners in the territory had been working on Fortymile, but as soon as the discovery on Bonanza became known all the miners in the Fortymile district stampeded to the new strike, and in a short time Bonanza creek was staked from end to end. Meantime Henderson and his party were working on Gold Bottom, and did not hear of the new discovery until the whole creek had been staked. Extensive prospecting at once commenced on Bonanza and its tributaries, and in a short time many of the stakers began to realize the marvellous wealth which their claims contained.

As soon as the news of the rich strike reached the outside world, thousands of gold seekers immediately started for the Klondike. Probably never before in the history of gold mining camps has there been such a rush of people from almost every vocation in life, as was seen in that irresistible stream of fortune-seekers, who climbed the Chilkoot pass and pressed on to Lake Lindeman, where the most rude boats and other flimsy craft were constructed for the journey of 500 miles down the Yukon river to Dawson. One of the saddest events in the history of this great stampede occurred one morning on the trail between the summit of the Chilkoot pass and Sheep Camp. For some distance between these two points the trail leads along the bottom of a steep mountain, and a long line of gold hunters were laboriously toiling along this stretch of the journey, some bearing their heavy burden of supplies in packs and some on sleds, when suddenly a huge mass of snow

came sliding down the mountain side, striking the line of travellers and burying between 50 and 60 men. Those who had escaped the catastrophe at once commenced to dig for their comrades, very few of whom were rescued, and some of the bodies were not found until the snow melted in the spring. Such is an instance of the dangers which confronted in the early days the thousands who had contracted the gold fever, and who were unaware of the innumerable hardships to be encountered on the journey to the new diggings.

In the spring of 1899 nearly all the creeks in the Klondike district had been staked; and in a few years this remarkably rich district produced millions of dollars. Though rich gravels were discovered on Gold Run, Hunker, Dominion and Sulphur, and much gold has been and is being taken from those creeks, yet no creek has been discovered that can be compared in richness with Bonanza and its tributaries. Creek claim No. 16 Eldorado (a tributary of Bonanza), containing an area of four acres, alone produced \$1,500,000. Creek claim No. 17 Eldorado, containing an area of 6.4 acres, produced \$1,300,000. The richest gravels so far discovered in the district, however, are gradually being worked out, and several large companies are acquiring, under the placer mining law, large numbers of claims on the different creeks, for the purpose of operating on a large scale by dredges and the hydraulic process.



A Yukon Garden.

CHAPTER 2.

CONSTITUTION AND GOVERNMENT.

In 1894 a detachment of the Northwest Mounted Police had been sent to the Yukon under the command of Inspector Constantine, who was authorized to represent all the different departments of government in the district. In the following year the mining industry had grown to such proportions that Inspector Constantine was no longer able to handle all the business he was called upon to transact, and an officer was appointed to take charge of the customs. In the following year a gold commissioner was appointed, and the recording office was removed from Fortymile to the site of the present city of Dawson. In 1898 the Yukon was created a Territory by an

Act of Parliament, and provision was made for local government by a legislative council composed of the commissioner and six persons to be appointed by the Governor in Council. In July, 1898, Mr. William Ogilvie was appointed commissioner, and assumed the administration of affairs, the other members of the council being the registrar, the superintendent of the Northwest Mounted Police, the judge of the Territorial Court and the legal adviser to the commissioner. In the following year the gold commissioner was also appointed a member of the council. The council, at that time, met several times each month for the transaction of business, which included not only the enactment of necessary legislation for the peace, order and good government of the Territory, but also the expenditure of much money for hospital and charitable purposes and for the construction of roads and trails to the different creeks, as well as the disposal of a multitude of minor affairs of a purely municipal nature.

In 1899 the Yukon Territory Act was amended, and provision was made for the election of two members to the Yukon Council. In 1902 the Act was further amended, providing for the election of five members. By Chapter 37, 2 Edward VII., provision was made for the election of a member to represent the Yukon Territory in the House of Commons of Canada, and on the 2nd December, 1902, the Honourable James H. Ross, who had resigned the commissionership, was elected the first member of parliament.

The Yukon Territory Act (Chapter 6, 61 Victoria) 1898, provided for the appointment of a commissioner to administer the government of the Territory under instructions from the Governor General and Minister of the Interior, and the appointment of not exceeding six persons to be a council, to aid the commissioner. This Act as amended in 1899 (Chapter 11, 62-63 Victoria, Part) provided for two elected members of council, and as further amended in 1902 (Chapter 34, 2

Edward VII.), for five elected members. The elected members hold office for two years, and are paid an indemnity for attendance.

The Supreme Court of Record is the Territorial Court, which is presided over by a senior judge and two other judges. It has appellate, civil and criminal jurisdiction. The Territorial Court en banc has appellate jurisdiction in appeals from the judgment of a police magistrate given under section 785 of the Criminal Code, 1892. In relation to mining disputes an appeal lies from the decision of the Territorial Court en banc to the Supreme Court of Canada. For the purposes of Part LII., Criminal Code, and amendments, an appeal lies from the judgment of the Territorial Court to the Supreme Court of Canada, unless the judges of the Territorial Court are unanimous, when there shall be no appeal.

Under Chapter 6 of 1906, the commissioner may refer to the Territorial Court for an opinion upon constitutional or other territorial questions. The decision of the court, although advisory only, shall, for purposes of appeal, be treated as a final judgment of the court between parties.

The commissioner, members of council and judges of the Territorial Court, and every commissioned officer of the Royal Northwest Mounted Police, can exercise in the Yukon Territory all the powers of one or two justices of the peace, under any laws or ordinances, civil or criminal, in the Territory. All persons possessing the powers of two justices of the peace can act as coroners.

The commissioner can establish unincorporated towns, and arrange for the election of an overseer. Overseers shall hold office for the calendar year ensuing after the day on which the election is to be held, but may be removed by the commissioner.

DAWSON, CAPITAL OF THE YUKON TERRITORY.

Situated at the confluence of the Klondike and Yukon rivers, and at a point accessible to navigation, is the townsite of Dawson, which quickly became the centre of business and the distributing point to the different creeks. The townsite was laid out in blocks, cabins were rapidly built, streets were graded and improved, stores, hotels, hospitals and churches were built, a water system, electric light plant and telephones were installed, business men started in opposition to the companies which had been trading in the district, and by 1900 Dawson had become a typical up-to-date western town. The city of Dawson was incorporated in 1902, and governed by a mayor and municipal council until the fall of 1904, when by petition and upon the verdict of a plebiscite, the charter was rescinded, and the affairs of the city are now administered by the commissioner.

By 1900 the accommodation afforded by the different government offices was found to be absolutely inadequate for the proper transaction of the increasing volume of business. During the summer of this year the post office building was erected at a cost of about \$51,000, providing accommodation for a post office, customs, registrar's office and telegraph office. In the same year a court house was erected at a cost of about \$50,000, and an administration building at a cost complete in the neighbourhood of \$100,000. The administration building provides accommodation for the transaction of business connected with the different branches of the Department of the Interior and territorial government, and a council chamber, in which the sessions of the legislative council are held. In 1902 school buildings were erected at a cost of about \$40,000.

In 1903-04 the Carnegie Library was built at a cost of over \$25,000, which amount was donated by Mr. Andrew Carnegie. There is also a large skating and curling rink, with club rooms and gymnasium, which were built at a cost of about \$40,000.



Administration Building, Dawson, Yukon Territory.

During the summer of 1900 Lord Minto, who was at that time Governor General of Canada, and Lady Minto, visited Dawson, and were accorded an enthusiastic welcome by the citizens, miners, and all classes of the community.

In September, 1904, the Honourable J. H. Ross, M.P., for Yukon, was appointed to the Senate, and in December of the same year Dr. Alfred Thompson was elected as an independent member, defeating Mr. F. T. Congdon, K.C., who had resigned from the commissionership to contest the seat.

During the summer of 1905 the Honourable Frank Oliver, Minister of the Interior, visited Dawson. Mr. Oliver was the first minister of the Crown who had visited the Territory, and he was accorded a very cordial reception. A large banquet was given in his honour by the citizens of Dawson, mining operators and miners. Mr. Oliver visited some of the rich producing creeks in the Klondike district, and no doubt gained much valuable information, which could not fail to be of assistance to the government in the consideration and disposition of important mining questions affecting the general development of the Territory.

COMMISSIONERS OF THE YUKON TERRITORY.

Name.	Appointed.	Resigned.
Major J. M. Walsh.	Aug. 17, 1897....	
William Ogilvie.....	Sept. 1, 1898....	
James Hamilton Ross.....	March 11, 1901....	
Frederick Tennyson Congdon.....	" 1, 1903....	Oct. 29, 1904.
William Wallace Burns McInnes..	May 27, 1905....	Dec. 31, 1906.
Alexander Henderson.....	June 18, 1907....	

ACTING COMMISSIONERS.

Name.	Appointed.
H. W. Newlands	Feb. 8, 1902.
Z. T. Wood, 1st time.....	Aug. 15, 1902.
Z. T. Wood, 2nd time.....	Dec. 20, 1904.
J. T. Lithgow, 1st time.....	Feb. 2, 1906.
J. T. Lithgow, 2nd time.....	Nov. 14, 1906.

LEGISLATIVE COUNCIL, 1898 TO 1900.

Name.	Office.	Appointed.	Expired.
J. E. Girouard.....	Registrar.....	July 7, 1898....	
Colonel Steele	Supt. N.W.M.P.	" 7, 1898....	Sept. 5, 1899.
T. H. McGuire.....	Judge.....	" 7, 1898....	Oct. 7, 1898.
F. C. Wade.....	Legal Adviser	" 7, 1898....	" 17, 1898.
C. A. Dugas.....	Judge.....	Oct. 7, 1898....	
W. H. P. Clement.....	Legal Adviser	" 17, 1898....	
Major A. B. Perry.. ..	Supt. N.W.M.P.	Sept. 5, 1899....	
E. C. Senkler.....	Gold Commissioner	" 5, 1899....	

LEGISLATIVE COUNCIL, 1900 TO 1903.

Name.	Office.	Appointed.	Expired.
J. E. Girouard.....	Registrar.....	July 7, 1898....	
C. A. Dugas.....	Judge.....	Oct. 7, 1898....	
Major A. B. Perry.....	Supt. N.W.M.P.	Sept. 5, 1899....	July 31, 1900.
E. C. Senkler.....	Gold Commissioner	" 5, 1899....	
Z. T. Wood.....	Supt. N.W.M.P.	July 31, 1900....	
W. H. P. Clement.....	Legal Adviser.....	Oct. 17, 1898 ..	Mar. 13, 1901.
F. T. Congdon.....	".....	Mar. 13, 1901...	Sept. 14, 1901.
H. W. Newlands.....	".....	Sept. 14, 1901...	
A. Wilson.....	Elected.....		
A. J. Prudhomme.....	".....		

LEGISLATIVE COUNCIL, 1903 TO 1905.

Name.	Office.	Appointed.	Expired.
J. E. Girouard.....	Registrar.....	July 7, 1898..	
C. A. Dugas.....	Judge.....	Oct. 7, 1898..	
E. C. Senkler.....	Gold Commissioner	Sept. 5, 1899..	
Z. T. Wood.....	Supt. N.W.M.P..	July 31, 1900..	
H. W. Newlands.....	Legal Adviser...	Sept. 14, 1901..	1903.
J. T. Lithgow.....	Comptroller.....	Jan. 8, 1904..	
<i>Elected.</i>			
J. A. Clarke.....		Jan. 13, 1903..	Jan. 13, 1905.
A. Thompson, M.D.		" 13, 1903..	Resigned, 1904.
Rev. John Pringle.....		" 13, 1903..	Jan. 13, 1905.
M. Landreville.....		" 13, 1903..	" 13, 1905.
R. Lowe.....		" 13, 1903..	" 13, 1905.

LEGISLATIVE COUNCIL, 1905 TO 1907.

Name.	Office.	Appointed.	Expired.
J. E. Girouard.....	Registrar.....	July 7, 1898..	
C. A. Dugas.....	Judge.....	Oct. 7, 1898..	
E. C. Senkler.....	Gold Commissioner	Sept. 5, 1899..	
Z. T. Wood.....	Supt. R.N.W.M.P.	July 31, 1900..	
J. T. Lithgow.....	Comptroller.....	Jan. 8, 1904..	
<i>District.</i>		<i>Elected.</i>	
H. C. Macaulay.....	North Dawson....	April 12, 1905..	April 12, 1907.
T. W. O'Brien.....	South Dawson....	" 12, 1905..	" 12, 1907.
George Black.....	Klondike.....	" 12, 1905..	" 12, 1907.
R. Gillespie.....	Bonanza.....	" 12, 1905..	" 12, 1907.
R. Lowe.....	Whitehorse.....	" 12, 1905..	" 12, 1907.

LEGISLATIVE COUNCIL, 1907 TO 1909.

Appointed members same as 1905 to 1907.

**Elected.*

R. Lowe, Whitehorse.
George Black, Klondike.
J. O. Lachappelle, North Dawson.

John Grant, South Dawson.
T. J. Kearney, Bonanza.

*Election held April 16, 1907.



Lake Kluane, Y.T.

CHAPTER 3.

PHYSICAL FEATURES.

Much of the Yukon region consists of numerous plateaux intersected along the watersheds and in the southwest of the territory by high and diversified mountain ranges. The greater part of the territory lies within the drainage-basin of the Yukon river, which has a watershed of 330,912 square miles, of which 150,768 square miles are in the Yukon Territory.

On the southwest is the Coast range of mountains, comprising part of the St. Elias and the Nutzotin mountains, in the vicinity of which is Kluane lake and the Kluane mining district. The highest summits of the St. Elias range are Mount Logan, 16,539 feet, and Mount Hubbard, 16,400.

On the southeast is the Cassiar range, with northwest and southeast trend, and a transverse width of nearly fifty miles. This range runs parallel to Teslin lake on the west and the

upper Liard on the east, and forms the southern portion of the divide between the great Mackenzie and Yukon basins. Northeast of the Cassiar mountains and in the watershed of the Mackenzie are the Simpson and the Campbell mountains on the west of the Finlaison river, which drains along its course Finlaison and Frances lakes. Finlaison lake has an elevation of 3,105 feet above sea level, and is situated on the summit of the watershed or height of land, which at this point divides the upper Pelly from the Finlaison river, a tributary of the upper Liard. Southeast of the Pelly, between the height of land and the confluence of the Pelly and Macmillan are the Glenlyon and Pelly mountains, the latter range being described as 'a series of square outlined pyramidal peaks.'

Between the headwaters of the Pelly and Stewart is the Selwyn Range, which for over a hundred miles divides the watershed of the Yukon and Mackenzie. From the northern extremity of the Selwyn Range and extending in a north-westerly direction is the Ogilvie range of mountains, which form the continuation of the divide between the two great watersheds. The principal summits of the Ogilvie range are: Mount Williams, 6,500 feet, on the eastern extremity; Mount Campbell, 8,200 feet, northeast of Dawson, and Mount Harper, 7,000 feet, northwest of Dawson. From a point about ninety miles north and slightly east of Dawson this divide or height of land runs in a northeasterly direction towards the delta of the Mackenzie and almost parallel for over a hundred miles with the Peel river in the Mackenzie basin and the headwaters of the Porcupine on the Yukon watershed. Northeast of Fort McPherson this height of land again curves to the northwest, and for some distance before reaching the boundary line is known as the Davidson mountains, dividing the waters which flow into the Arctic from the Yukon basin.

Between the eastern portion of the Ogilvie range and the upper Stewart is the Duncan mining district, interspersed with

numerous lakes and high peaks, some of which attain an elevation of 7,000 feet.

On the east of the Duncan district is the Flat Creek plain, 'a depression ten to fifteen miles in width, which extends from Stewart northward to the Klondike and continues on past Twelvemile river. The Flat Creek plain separates the Klondike hills from the Ogilvie range. The elevation of the plain at the summit between the Klondike and Stewart rivers is about 2,500 feet, and at the summit between Klondike and Twelvemile river, the first parallel stream at the north, is about 2,500 feet.' (McConnell.)

In the Geological Report, Vol. XIV., Part B., the general features of the Klondike gold-fields are described as follows:—

'The Klondike region is a typical example of the thoroughly dissected upland. It forms part of the Yukon plateau, and subsequently deeply trenched by a number of small streams tributary to the main river courses. In comparatively recent times, a second elevatory movement has taken place, resulting in a further deepening of the valleys of from 500 feet to 700 feet. Portions of the old valley bottoms, still covered with heavy accumulations of gravel, occur at many points, forming terraces of varying width, bordering the newer valleys. Viewed from a distance the Klondike district has a hilly, even mountainous aspect, but in reality consists of a series of long branching ridges, the summits of which have been curved irregularly into hill and hollow by unequal denudation. Most of the ridges originate at or near the Dome, the topographic centre of the district, and the highest eminence in it. The Dome is situated nineteen miles southeast of Dawson, about midway between Indian river and the Klondike. It has a height of about 4,250 feet above the sea, 3,050 feet above the Yukon at Dawson and about 500 feet above the ridges at the base.' (McConnell.)

That portion of the Yukon to the west of Dawson and extending south to the Nutzotin mountains and east to Fort Selkirk on the Yukon river, may be described as a part of the Yukon plateau, with rounded hills and irregular ridges but without any well defined mountain ranges.



No. 60.—Below Discovery, Bonanza Creek. Open cut operated by steam shovel.

Along the course of the Lewes river are the Dawson range, south of Fort Selkirk, the Semenof hills at the confluence of the Teslin and Lewes, and the Miners' range along the southwest of Lake Laberge.

'The country bordering the northeastern slope of the Coast range, including the Windy Arm mining district, may be characterized generally as consisting of a system of wide valleys, often interlocking in a peculiar manner, separated by mountain groups, and ridges rising from 4,000 to 5,000 feet above the valley flats. Most of the valleys are bottomed at intervals with long, narrow, deep lakes, due to the blocking of the channel at various points with glacial drift. The uplands are usually fairly regular in outline, but in places are exceedingly rugged, and are often deeply incised by the numerous small streams which flow down their sides.' (McConnell.)

Dr. Dawson, in his report of early explorations of the region along the northeastern edge of the Coast range, states that this system of lakes 'constitute a singularly picturesque region, abounding in striking points of view and in landscapes pleasing in their variety and impressive in their combination of rugged mountain forms.'

RIVERS AND LAKES.

The principal rivers in the Yukon Territory are the Yukon, the Lewes, the Pelly, the Stewart, the Peel, the White river and the Porcupine.

The Yukon is formed by the confluence of the Lewes and Pelly at Fort Selkirk, and flows in a northwesterly direction until it enters the United States Territory of Alaska at a point about 70 miles northwest of Dawson. Commencing at the mouth of Fortymile creek, a tributary of the Yukon on its left limit about 20 miles south of the point where the Yukon crosses the boundary line, 'the width of the river in the lower portion seldom exceeds half a mile, but above Fort Reliance it gradually enlarges, and in the southerly reach

occasionally exceeds a mile in width. In the expanded stretch, however, much of the surface is occupied by islands. The current is swift and uniform, and at a medium state of the water runs at the rate of five miles an hour . . . The valley of the Yukon between Fortymile and the mouth of the Stewart and on to the Pelly is cut through an elevated undulating plateau, on which rest numerous low ranges of rounded and partially bare hills, but is not crossed by any well defined mountain range. It is somewhat uniform in appearance, but affords many picturesque and even grand views. Bluffs of rock of a more or less precipitous nature are of constant occurrence, and bold rampart-like ranges of interrupted cliffs, separated or continued upwards by steep grassy or wooded slopes characterize the banks for long reaches. The flats are few and unimportant, and as a rule the river washes the base of the banks on both sides. The width of the valley varies from one to three miles and its depth from five to fifteen hundred feet. Its great size, taken in connection with the hard character of the crystalline rocks through which it has been excavated, afford evidence of great age, and point to an origin long antecedent to the glacial period. The same fact is also emphasized by the remarkably uniform grade, which the river has worked across terraces of heterogeneous hardness, ranging through the whole geological scale in its long course from Rink rapid to the sea, a distance of nearly 1,700 miles . . . 'From the mouth of the Stewart the Yukon trends in a southwesterly direction for ten miles to its junction with White river. In this reach it averages a mile in width, and is filled with islands. The banks of the valley are steep and rocky, and were estimated at from 800 to 1,000 feet in height.' (Report of R. G. McConnell, 1887-88.)

In Mr. Ogilvie's report published in 1898 the cross sectional area and volume of water in the Yukon river are computed as follows: 'The cross sectional area at the boundary,

measured in December, 1895, is 21,818 feet. There is a channel 600 feet wide, not less than 22 feet deep, and one 400 feet wide, not less than 26 feet deep. During summer level these depths would not be less than four feet deeper, and the cross sectional area 27,000 feet. The discharge at this first level is approximately 96,000 cubic feet per second, at summer level it approximates 135,000 cubic feet; at flood level it approaches 180,000 cubic feet or more, possibly reaching for short times, 225,000.'

Lewes River.

'The Lewes river, where it leaves Lake Marsh, is about 200 yards wide and averages this width as far as the Cañon. Below the Cañon proper there is a stretch of rapids for about a mile, then about half a mile of smooth water, following which are the Whitehorse rapids, which are three-eighths of a mile long . . . For some distance below the Whitehorse rapids the current is swift and the river wide, with many gravel bars. . . The reach between these rapids and Lake Laberge, a distance of $27\frac{1}{2}$ miles, is all smooth water with a strong current.' (Ogilvie's report, 1887.)

'The total length of the route by the Lewes river from "the Landing" on Lake Lindeman to the site of Fort Selkirk is 357 miles. From the outlet of Lake Laberge, to the same point, is a distance of 200 miles, in which the total descent is 595 feet, or at the rate of 2.97 feet to the mile.' (G. M. Dawson, report 1887.)

Pelly River.

In a recent map (catalogue No. 275) prepared to illustrate the summary reports of R. G. McConnell, Jos. Keele and C. Camsell, the source of the Pelly is located in the height of land between the Campbell mountains and the Selwyn range, and flows southwest to some distance north of Hoole cañon, where it takes a wide curve and flows northwest and west to its confluence with the Lewes. At a point in a direct line about 31 miles west of Hoole cañon, Dr. Dawson determined

the approximate height of the Pelly as 2,965 feet, the width of the river at that point being 326 feet, with a current slightly exceeding $2\frac{1}{2}$ miles an hour and middle depth of 7 feet. The volume of water at the same point was computed to be 4,898 cubic feet per second. At Hoole cañon the river rushes through between rocky banks and cliffs for about three-quarters of a mile, and the water is rough and dangerous, the estimated fall being 20 feet. On either side there are steep rocky banks, and in some places perpendicular cliffs about a hundred feet in height. Twenty-three miles below Hoole cañon the Ross river, which rises in some of the spurs of the Selwyn range, flows in from the north. The valley of the Ross is narrow, and bordered by high steep hills at its mouth. Between the cañon and Ross river the current of the Pelly is swift, with numerous small rapids, and on the south bank there is a wide extent of low wooded country extending to the Pelly mountains. From Ross river to Glenlyon, a tributary on the right bank of the Pelly rising in the mountains of the same name, is a distance of 64 miles. This stretch of the river is bordered on the north by ridges and hills which, before Glenlyon is reached, become mountains of between 4,000 feet and 5,000 feet high, situated about six miles from the river. The river is swift, and much divided by gravel bars. There are two rapids in this stretch, one about two miles east of Glenlyon and the other below the mouth of that stream. From Glenlyon to the Macmillan, measured by the course of the river, the distance is $61\frac{1}{2}$ miles. On the north bank there are low irregular hills, showing extensive grassy slopes on their southern exposures. The Macmillan and Pelly valleys coalesce at an acute angle at the western point of the range of hills which alone has separated them for some distance, and the two streams must run parallel for many miles above their junction. The Macmillan is bounded to the north by a well defined range of low mountains which continues to the westward for about ten miles as



No. 2.—Below Discovery, Hunker Creek. Showing a self-dumping outfit.

the bordering range of the united streams. The distance from the Macmillan to its confluence with the Lewes measured along the course of the stream is 74 miles. For some distance below the mouth of the Macmillan the Pelly flows through a trough-like valley, and then through Granite cañon, about four miles in length, 'with steep, rocky scarped banks and cliffs' 200 to 250 feet in height. Below the cañon there is a wide belt of open country on both sides of the river, until within a few miles of Selkirk, when the river is bordered with low hills and ridges. The total length of the Pelly from Campbell's portage to its confluence with the Lewes is 320 miles.

Stewart River.

The Stewart river rises in the northern extremity of the Selwyn range, and flows in a westerly direction until it reaches a point about 20 miles in a direct line northwest of Mayo lake, when it again flows east and makes a wide detour around Mayo lake, then northwesterly over Fraser falls and in a general westerly direction from Mayo to the Yukon river, into which it flows about 80 miles south of Dawson. The principal tributaries of the Stewart are Lansing, Hess river or South branch of Stewart, and McQuesten river, a tributary on the right bank rising in a spur of the Ogilvie range north of Mayo lake. The volume of water flowing in the Stewart was measured by Mr. A. J. Beaudette, government mining engineer, at a point near Gordon's Landing, and computed to be 1,010,166 miner's inches, or 1,515,250 cubic feet per minute. There are no tributaries of any importance between Fraser falls and Gordon's Landing, so that this measurement is approximately the volume of water flowing over the falls. The Stewart river is navigable from its mouth to the falls, and during the summer small stern-wheel steamers ply between Dawson and Mayo Landing.

Peel River.

The Peel river rises in the northern extremity of the Ogilvie range, and flows in a general westerly direction to its confluence with Snake river, where it takes a wide curve and flows northward towards Fort McPherson. 'Below Fort McPherson the Peel river flows in a straight line northward for twelve miles; it then divides the eastern channel, which is a travelled route and has been surveyed by Messrs. McConnell and Ogilvie, joining the Mackenzie river by two mouths another twelve miles beyond. A careful estimate of the discharge of the Peel river was made at Fort McPherson on the 31st of July, when the level of the water was about medium stage. Though the watermark of the spring freshet is thirty feet above the level in July, the Peel river keeps at a fairly uniform level all summer, and scarcely falls more than three or four feet below the level when the discharge was taken. The figures obtained for the discharge were 49,206 cubic feet per second. The average velocity is about two miles an hour, and the greatest depth fifteen feet.' (Camsell.)

White River.

The White river is a tributary of the Yukon, into which it flows about ten miles north of Stewart. It rises in the Nutzotin mountains, and flows north and east. The current of the White river is estimated at about eight miles an hour. The mouth of the river is about 200 yards wide, but the main body of water is confined to a channel not more than 100 yards in width, and the water is so muddy that two miles below the point where it enters the Yukon the latter river is completely discoloured.

Porcupine River.

The Porcupine rises north of the northern extremity of the Ogilvie range, and flows north and slightly east for about

150 miles, when it takes a wide curve about 50 miles west of Fort McPherson and flows in a westerly direction, joining the Yukon on its right bank at Fort Yukon in the Territory of Alaska.

Besides the principal rivers already mentioned there are smaller rivers, which are well known throughout the territory on account of their proximity to the different mining districts. These rivers may briefly be described as follows:—

Teslin or Hootalinqua and Big Salmon, tributaries on the right bank of the Lewes, the former flowing in an almost direct northwest line from Teslin lake and entering the Lewes about thirty miles below Lake Laberge, and the Big Salmon flowing in a similar direction, slightly north and almost parallel to the Semenof hills.

Indian river, a tributary on the right bank of the Yukon about thirty miles south of Dawson. Quartz, Dominion and Australia creeks flow into Indian river, which may be described as the southern boundary of the Klondike gold-fields.

Klondike river, a tributary on the right bank of the Yukon at Dawson. This river rises in the Ogilvie range and flows in a south and westerly direction, constituting the northern boundary of the Klondike gold-fields proper. Bonanza, the richest creek so far discovered in the Klondike, as well as Bear, Hunker and Flat creeks, empty into the Klondike river on its left or south bank.

Sixtymile, a tributary on the left bank of the Yukon at Ogilvie. This river rises near the boundary line almost west of Dawson, flows easterly and northeast, almost parallel with the Yukon for upwards of thirty miles, but flowing southeast while the Yukon flows northwest.

Fortymile, a tributary of the Yukon at Fortymile. This river rises in Alaska, and was the most important mining centre in the Yukon before the discovery of the Klondike creeks.

LAKES.

The principal lakes in the Yukon Territory are situated in the Duncan, Kluane and Whitehorse districts.

In the Duncan district, south of the eastern extremity of the Ogilvie range, are Mayo lake and McQuesten lake.

In the Kluane district, northeast of the St. Elias range, are Kluane lake, Lake Aishihik, Dezadeash lake and Kusawa lake.

North of Whitehorse is Lake Laberge, thirty-one miles in length, drained by the Lewes river.

'Tagish lake forms part of a chain of long narrow lakes including, in order from north to south, lakes Lindeman, Bennett, Nares, Tagish and Marsh, which commence well within the coast range of mountains and extend northward and eastward for a distance of nearly seventy miles. The general direction of all these lakes is north and south, with the exception of Lake Nares and the upper part of Tagish lake, which have an east and west alignment. Windy Arm joins Tagish lake near its head, and extends south for a distance of twelve miles. Its course is nearly parallel to that of Bennett lake, and the two sheets of water inclose an area of high mountainous country about eight miles in width.' (McConnell's report, 1905.)

East of this system of lakes is Teslin lake, the half of which extends into the province of British Columbia. This lake is the source of the Teslin or Hootalingqua river. The Nisutlin river, which rises in the southern ranges of the Pelly mountains, flows into Teslin lake on its western shore.

The following is the area of several of the largest lakes in the territory:—

Kluane..	184 square miles.
Laberge..	86 “
Tagish..	139 “
Teslin..	245 “



Prospecting.

CHAPTER 4.

MINING.

PLACER MINING.

Placer mining, on what may be termed a fairly extensive scale, was first carried on in the Yukon Territory in what is known as the Fortymile district, in the year 1894. Before this time, however, there had been considerable river-bar mining on the Lewes and Salmon in 1881 and 1882 and on the Stewart river in 1885. It was estimated by Dr. Dawson, on information obtained from the miners, that \$100,000 was obtained from the Stewart river during the years 1885 and 1886. The principal bars on this river were worked out in a few years, and in 1887 a discovery of coarse gold was made

on Fortymile creek, and most of the miners stamped to that stream. It has been estimated that during the years 1887 and 1888 between 100 and 350 miners were employed on the Fortymile river. In 1894, however, the two principal creeks that were being worked in the Fortymile district were Glacier and Miller, tributaries of the Sixtymile river, a stream entering the Yukon about sixty miles south of Dawson, and although considerable mining was carried on upon these two creeks the values found were not such as to create any general interest.

The great discovery of gold in what is known as the Klondike district was made on August 16, 1896, on Bonanza creek, a tributary of the Klondike river about two miles from its mouth. A stampede followed, and Bonanza creek and its chief tributaries, as well as Hunker creek, were staked from top to bottom before the end of the year. The following year discoveries were made on Dominion, Sulphur and Quartz creeks. These five creeks, with the addition of Bear creek, which enters the Klondike between Bonanza and Hunker, and Gold Run, which enters Dominion creek close to the mouth of Sulphur, are the chief gold-bearing creeks in the Klondike district. It may be mentioned here, however, that Bonanza creek and its tributary, Eldorado creek, have proved to be by far the richest creeks in the district.

One very striking peculiarity of mining in the Klondike district is the fact that the ground is frozen to bed-rock, which ranges from 15 to 40 feet in depth. Owing to this frozen ground miners had to devise new methods of mining. They derived very little benefit from previous experience in other mining camps. At first all shafts were sunk to bed-rock by what is known as 'wood fires.' A fire was built on the ground about six feet long by four feet in width. This fire was allowed to burn from eight to ten hours, and the ground which had thawed under it was then taken out. Another fire was started in the hole thus excavated, and by this means they gradually



No. 21.--Below Discovery, Sulphur Creek.

worked their way to bed-rock. From two to three feet of dirt was taken out with each thaw.

The bed-rock is covered with a layer of gravel, ranging from one to four feet deep. The gravel and the bed-rock for about two feet in depth below contain gold. The formation from this pay gravel to the surface varies to a certain extent on the different creeks, but as a general rule is a composition of organic matter called 'muck.' A miner, after sinking his shaft to bed-rock then drifts by the same means along the bed-rock from the bottom of the shaft, and hoists out the gravel and bed-rock containing the gold. For the first two years of the camp the shaft-sinking and drifting was done during the winter, the gravel being taken out and put in a heap by itself. Then in the spring when the water starts to run these dumps are shovelled into sluice-boxes erected for the purpose, and thus the gold is separated from the gravel. Though the frozen ground creates much difficulty in the sinking of shafts, yet at the same time it has this advantage: when the miner drifts from the bottom of a shaft, it is not as a general rule necessary for him to timber the drift, as the frozen 'muck' holds up with perfect safety even where very extensive drifting is done. The miner is thus saved the very considerable expense of timbering his drifts.

The values in the bench gravels were not discovered until the autumn of 1897, and were first found on the left limit, close to the junction of Eldorado and Bonanza. These benches have proved to be by far the richest and most extensive in the territory. The pay extends in an unbroken line from French hill (on the left limit of Eldorado creek, about one and one-half miles from its mouth) to No. 60 below Discovery on Bonanza creek, a distance of about seven miles. The claims located on this pay-streak were worked in a large number of cases by tunnelling from the side of the hill until the bed-rock is reached on the level of the pay gravel. In a large number

of cases, however, the original system of sinking shafts was adopted.

The bench pay appears to have crossed Bonanza at No. 60 below Discovery, and to have continued down stream on its right limit until reaching Lovett gulch, when it appears to have swerved off eastward from Bonanza creek, and crossed over a small divide to the Klondike river. A considerable number of good claims have been found on this pay-streak, but as a general rule have not proven to be anything as good as the claims on the benches above No. 60 on the left limit. Although a very considerable amount of pay gravel has been found on the benches on Hunker on both limits, in different localities, there are no very long regular pay-streaks. On Last Chance creek, however, a tributary of Hunker creek, an excellent pay-streak was found on the benches on its left limit, running almost the whole length of the creek.

On the Indian river side the bench pay has not been so good, although on Dominion creek there seems to have been considerable bench pay on the left limit between the Discoveries, and for some distance below lower Discovery.

The mining of bench pay has been considerably handicapped owing to the difficulty in obtaining sufficient quantities of water by gravity. In order to obtain water by gravity at the proper elevation, it had to be taken almost from the source of all the small creeks in the vicinity of the mines upon which the supply was to be used. As these creeks are small, the result is that a sufficient quantity of water can only be available in the spring of the year for a very short period, the rains of the summer being of very little value in this regard.

In 1901 a number of miners tried the experiment of pumping water from the creeks to the benches, but operating expenses, chiefly the cost of fuel, was found to be so great that in nearly every case the experiment was a failure. It was eventually found that the cheapest method of working the

benches was by hydraulicking, even where the quantity of water was limited.

The great rush to the Klondike started in the spring of 1897. The larger portion of this rush, however, did not arrive in Dawson until the spring of 1898. It was estimated that at one time during the summer of 1898, 25,000 people lived in and about the city of Dawson. A large portion of this number, however, stayed in the territory for a very short period.

The following winter was noted for the large number of stampedes that took place. As the people who arrived in the territory in the spring of the previous year had no mining property, they took every opportunity available to stake claims. The result was that when the slightest rumour got abroad that a discovery of gold had been made on a new creek, these people would immediately start out for the scene of the new strike, or where the discovery was supposed to have been made, in order to stake. Every stampede was a race, the first arriving at the creek having the best opportunity to obtain valuable property. Almost every creek within 100 miles of Dawson, either on the Yukon river or on the Klondike river, was staked from end to end during that winter.

These stampedes, however, did not result in any find of great importance. All these creeks were prospected more or less, and although on nearly every creek 'colours'* were found, there was not sufficient value discovered in any case to warrant working the properties by the methods in use at that time.

Improved Methods of Thawing.

Owing to the many improvements made in the methods of mining, the whole system has totally changed from what it was in the years 1897 and 1898. In the winter of 1898-1899

* Minute specks of gold.

it was discovered that by using steam the frozen gravel could be thawed at a rate of from eight to ten feet a day—a great improvement on the old system whereby the thaw was only from two to three feet a day. The steam is forced into the frozen ground by what are known as steam points. A steam point is an iron pipe of about $5\frac{1}{2}$ feet in length, connected to a cross-head by means of a small rubber steam hose; the cross-head is connected to the main pipe, which is connected to a boiler supplying the steam. As a general rule the miner drives the steam pipe into the ground, where it is left for a short time until a hole is thawed. The pipes are then replaced by ordinary gas pipes, as it is found that the gas pipes allow more steam to be forced into the ground. These pipes are called locally 'sweaters.' In very dry gravels the holes are made with a mixture of hot water and steam, taken from the blow-off of the boilers; in loose gravels the steam alone is used. Another economical method used for thawing gravels in drifting operations is what is called the hot water method. This is especially used where the gravels are hard. A description of the method is as follows:—

A sump-hole is made at the bottom of the shaft, and a small duplex pump is set up, to which is attached a small fire-hose with a two-inch discharge, and as the water is pumped against the face of the drift it is returned to the sump-hole, leaving the gravels thawed on the drift. This water is pumped over and over again on the face of the drift.

Open-cut Method.

On all claims where the depth of bed-rock is less than fifteen feet it has been found that the ground can be operated more economically by what is known as the open-cut method. This method has been used very largely on Bonanza and Eldorado creeks. At first the surface of the ground is removed by what is termed 'ground-sluicing,' the water from the stream



No. 39.—Below Discovery Bonanza. Open cut work with self-dumping outfit.

is diverted into small ditches, and men with picks and shovels remove the material into running water, which is carried away. By this means all the muck or surface material is gradually carried away until nothing is left but the gravel containing the gold. The sluice-boxes are then set up, and the gold-bearing gravel is shovelled in.

The mining methods to which reference has been made are the chief methods whereby placer mining is carried on in the territory under the term of ordinary placer mining.

GRAVELS OF THE KLONDIKE GOLD-FIELDS.

‘A section across the valley of any of the gold-bearing streams entering the Klondike shows a comparatively narrow trough-like depression below, from 150 to 300 feet deep, bordered on one or both sides by wide benches beyond which the surface rises in easy, fairly regular slopes up to the crests of the intervening ridges. The benches represent fragments of older valley-bottoms partially destroyed by the excavation of the present valleys. Narrow, rock-cut terraces occur at intervals between the level of the old valley-bottoms and the present level.

‘Auriferous gravels occur on the present valley-bottoms on the portions of the old valley-bottoms still remaining, and on the rock terraces cut into the slopes connecting them. They may be classified as follows, beginning with the youngest:—

‘Low-level gravels—

‘Gulch gravels, creek gravels, river gravels.

‘Gravels at intermediate intervals—

‘Terrace gravels.

‘High-level gravels—

‘River gravels.

‘White channel gravels:

‘White gravels, yellow gravels.’

Low-level Gravels.

‘The low-level creek gravels are the most important gravels in the district. These gravels floor the bottoms of all the valleys to a depth of from four to ten feet. They rest on bed-rock usually consisting of decomposed and broken schists, and are overlaid by a sheet of black frozen muck ranging in thickness from two to thirty feet or more. They are local in

origin, and consist entirely of the schists and other rocks outcropping along the valleys. The schists pebbles are usually flat, round-edged discs measuring one to two inches in thickness and two to six inches in length. They constitute the greater part of the deposit, but are associated with a varying proportion of rounded and subangular quartz pebbles and boulders, and, less frequently, with pebbles derived from the later eruptive rocks of the region. The pebbles are loosely stratified, are usually embedded in a matrix of coarse reddish sand, and alternate in places with thin beds of sand and muck.

‘The creek gravels frequently inclose leaves, roots and other vegetable remains, and also the bones of various extinct and still existing northern animals, such as the mammoth, the buffalo, the bear, the musk-ox and the mountain sheep and goat.

‘The gulch gravels occupy the upper portions of the main creek valleys and small tributary valleys. They differ from the creek gravels in being coarser and more angular. A considerable proportion of their material consists of almost unworn fragments of schist washed down from the adjacent slopes. They contain the same vegetable and animal remains as the creek valleys.

‘The only river gravels of the district proven, so far, to contain gold in paying quantities occur in the wide flats bordering the lower portion of the Klondike river below the mouth of Hunker valley. The river gravels consist of quartzite, slate, chert, granite and diabase pebbles largely derived from the western slopes of the Ogilvie range. They are harder and better rounded than the creek gravels—a necessary result of the greater distance travelled.’

Terrace Gravels.

‘Rock terraces occur at various points cut into the deep slopes of the present valleys. They were produced during the deepening of the valleys, and are simply remnants of former valley-bottoms. They are small, seldom exceeding a few yards in width and a few hundred yards in length, irregular in distribution, and occur at all elevations up to the bottoms of the old valleys. The terraces support beds of gravel, usually from six to fifteen feet in thickness, very similar to that in the creek bottoms, but showing somewhat more wear. The terrace gravels, like the creek gravels, are overlaid, as a rule, with



No. 16.—Above Discovery, Hunker Creek. 'Shovelling-in.'

muck, and at one point on Hunker creek were found buried beneath 100 feet of this material.'

High-level Gravels.

'High-level gravels are extensively distributed along Bonanza and Hunker creeks and some of their tributaries, and also occur on Eldorado, Bear, Quartz, Nine Mile and All Gold creeks. They consist principally of ancient creek deposits, overlaid near the mouths of some of the valleys by gravels laid down by the Klondike river, when it ran at a much higher level than at present and occupied a somewhat wider valley.

'These gravels occur at various points along the Klondike river. In the Klondike district they are found covering the small plateaux in which the ridges separating Bonanza and Hunker creeks from the Klondike river terminate. They rest in both places on high-level creek gravels at an elevation of about 450 feet above the present valley-bottoms. They have a thickness of from 150 to 175 feet, and consist principally of well-rolled pebbles, of quartzite, slate, chert, granite, diabase and conglomerate embedded in a matrix of gray sand, and derived, like those in the present stream, from the western part of the Ogilvie range. The high-level river gravels are reported to contain gold in paying quantities at Acklen's farm, a name given to a portion of the bench on the right limit of the Klondike, two miles above its mouth, but are generally of little economic importance.'

High-level Creek Gravels.

(White Channel.)

'The high-level creek gravels consist principally of the important deposit known as the quartz drift white wash of white channel gravels. The latter name is now generally used by the miners, and is adopted in this report.

'The white channel gravels are ancient creek deposits laid down in the wide, flat-bottomed valleys which characterized the region previous to the last general upraise. After their deposition, the country was elevated 600 to 700 feet, and the increased grades acquired by the streams enabled them to cut down through their old gravel beds into the bed-rock beneath, and to excavate the steep-sided trough-like valleys in which they now run. The old gravels now occur on wide benches bordering the present valleys at elevations of from 150 to 300

feet above them, the elevation generally increasing down stream. Their distribution along the valleys is irregular, as a large portion of the deposit was destroyed during the deepening of the main valleys and the tributary valleys and gulches.

‘The general character of the white channel gravels is remarkably similar in the various Klondike creeks, but differs considerably from the ordinary type of stream deposits in other regions. They consist of a compact matrix of small, clear, little-worn and often sharply angular grains of quartz and scales of sericite thickly packed with rounded quartz pebbles and rounded and subangular and wedge-shaped quartz boulders often two to three feet in diameter. Flat and subangular pebbles of sericite schist, the principal rock of the district, are also present, but in much smaller numbers than the quartz constituents. The schist pebbles are usually decomposed and crumble rapidly when thawed out. The deposit is always stratified, but, except in rare instances, there has been no sorting of the various constituents into separate beds, and the composition is very uniform throughout. The colour is characteristically white or light gray, due to the preponderance of the quartz constituents and the leaching out of the greater part of the iron. The colour is darker and the sands are noticeably coarser towards the limit of the deposit on the upper part of the creeks.

‘The white channel gravels vary in thickness from a few feet to 150 feet, and in width from 100 feet to half a mile or more. The deposit increases in volume descending the stream, and attains its greatest development near their mouths.

‘The white compact gravel deposit described above is overlaid in places by loosely stratified gravels known as the yellow gravels. The latter are of a rusty colour, are more distinctly stratified than the white gravels, and consist mainly of flat schist pebbles lying loosely in a coarse sandy matrix. Quartz pebbles and boulders are also present, but are much less abundant than in the white gravels.

‘These upper gravels are not so widely distributed as the white gravels, but are present on several of the Bonanza hills and at points along Hunker creek. At Gold hill, on Bonanza creek, the white gravels occur as a buried ridge bordering the present valley, and the depression between them and the southern slope of the old valley is filled with yellow gravels to a depth of 115 feet. The same relationship between the two deposits obtains at Adams hill, and probably at other places,



Gold Run Creek.

but is only determinable where shafts have been sunk to bed-rock across the whole width of the old valley.

‘Unlike the creek gravels, the white channel gravels are destitute, or nearly so, of vegetable or animal remains. None were found by the writer, and the few reported discoveries of fragments of wood and bone by miners are all open to question.

‘On Dominion creek and its tributaries, Sulphur and Gold Run creeks, white gravels, almost identical in character with the high-level white channel gravels of Bonanza and Hunker creeks, occur in the bottoms of the valleys underlying the present stream gravels. Their low position is due to the fact that the present valley of Dominion creek corresponds, not to the present valley of Bonanza and Hunker creeks, but to the old valleys cut through by them.’ (McConnell.)

During the summer of 1906 it was reported that gold was contained in the pebbles and boulders of the white channel, which by process of crushing and amalgamation it was considered would yield a profit. The Territorial Government promptly arranged to have a test made by the cyanide process. Eighteen and one-half tons of quartz boulders, which had been washed from the white channel by the hydraulic process, and nine and one-half tons of virgin ground from different parts of the white channel on Bonanza and Last Chance creeks, were tested under the superintendence of the government mining engineer in Dawson. The virgin gravels were an average sample of the deposit from top to bottom, and the values given include the placer gold, which can be recovered by washing, the gold which is lost by washing and recovered by amalgamation and the gold in the quartz which cannot be recovered other than by amalgamation. The proportion of quartz boulders to fine material in a cubic yard of virgin gravel, was one of boulders to three of fine material. The value of gold recovered by stamp battery amalgamation was as follows:—

Average value of quartz per ton.. . . .	32c.
Average value of virgin ground per cubic yard.. . . .	54c.

The tailings in the test did not exceed 20 cents per ton in

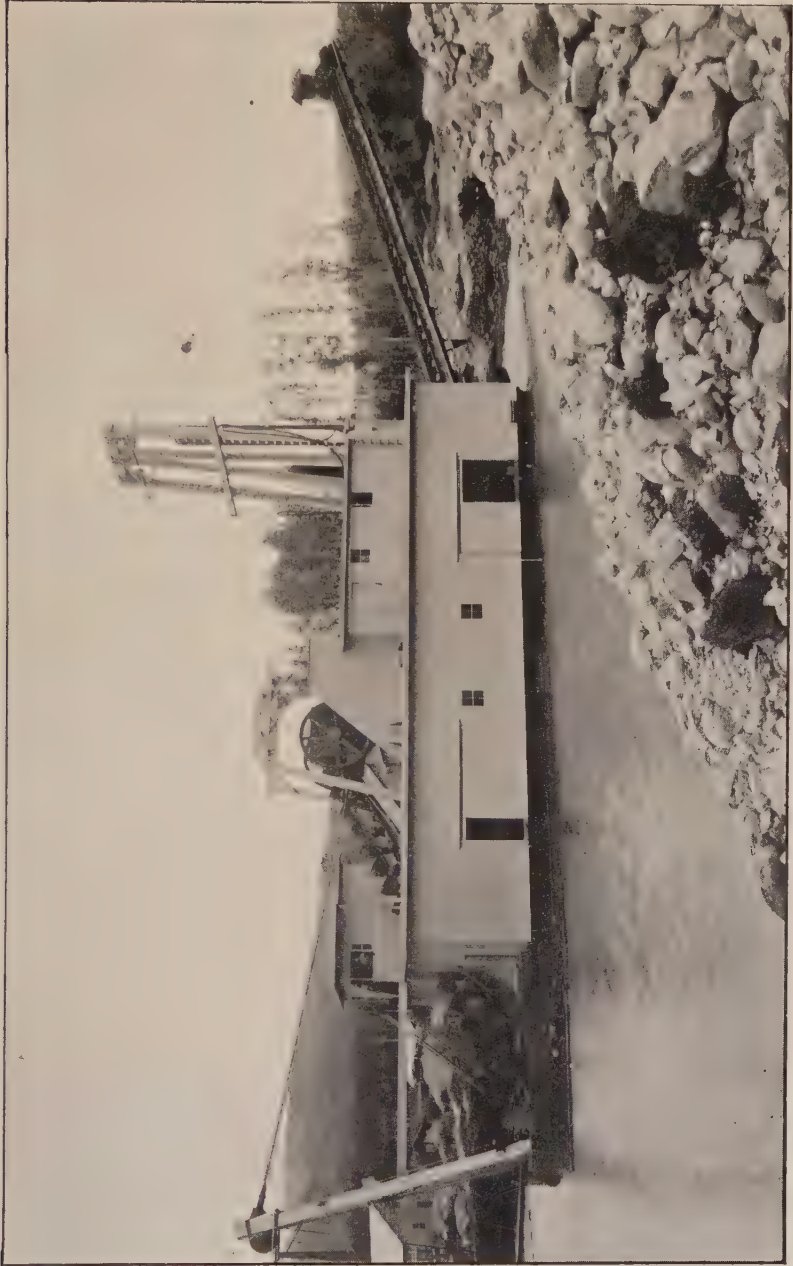
gold. The cyanide test was, therefore, omitted, as the samples did not contain sufficient values to warrant further treatment by that process. The basis upon which a cubic yard of gravel was calculated was 3,000 'pounds.

The volume of the white channel deposit, which is situated on narrow benches and at an elevation eminently suitable for hydraulic mining, has been estimated by McConnell at about 250,000,000 cubic yards on Bonanza and its tributaries, 200,000,000 cubic yards on Hunker and its tributaries, 15,000,000 cubic yards on a low bench on Quartz and a smaller quantity on Bear creek.

All the old creeks to which reference has been made, viz.: Bonanza, Eldorado, Hunker, Bear, Dominion, Gold Run and Sulphur, have been fairly thoroughly worked out, as far as ordinary placer mining methods are concerned. Some of the richer claims on Eldorado have been worked over three times; and it is the general opinion that the only method of again working these creeks at a profit is by means of dredging. Placer mining has now reached a stage where work must be carried on upon a large scale to make it profitable. Mining by the ordinary placer mining methods is about over, and in the near future all creeks will be worked by dredges where the conditions are at all favourable to that system of mining.

As to the benches, it will be necessary to obtain a greater and more constant supply of water than has heretofore been available.

A large number of creek and bench claims on Bonanza and Eldorado creeks have been purchased by the Yukon Consolidated Gold Fields Company. This company, together with the Northwest Hydraulic Mining Company, are making gigantic preparations to mine on a large scale by the dredging and hydraulic process the creek and bench claims on Bonanza and Eldorado.



Bear Creek Dredge.

Duncan District.

Next to the Klondike district in importance as a gold-bearing district is the Stewart river. The tributaries of this stream, near its mouth, were all staked in 1898, but none of them proved to be what is termed 'paying propositions.' In 1900 a stampede took place to Clear creek, a tributary of the Stewart about 90 miles from its mouth. On this stream several claims were found to be of considerable value, and mining has been carried on upon several claims on this creek up to the present time. Duncan creek was staked in 1901-1902. This creek is a tributary of the Mayo river, which enters the Stewart river at about 175 miles from its mouth. Claims of greater value were found on this stream than on the Stewart river, but the miners on Duncan have had considerable difficulty in working certain portions of the creek where the bed-rock is very deep (over 100 feet) owing to their shafts being flooded by water when they have sunk to a depth of about 70 feet. This difficulty has, so far, prevented all the owners from getting to bed-rock. From prospects, however, that they have found on the rims of some of these claims there is a general opinion that once they succeed in controlling the water by pumps of sufficient capacity they will obtain good results when they reach bed-rock. Highet creek, a tributary of Mayo, was staked in 1903, and has been worked up to the present time. This creek, although small, has been a very good producer.

Whitehorse District.

In the season of 1898, during the great rush to the Klondike, a large number of the streams flowing into Teslin lake and the upper tributaries of the Yukon river were staked by the people who were on their way to the Klondike. The only case, however, where any of these streams amounted to anything for mining purposes was the tributaries of what is known as the Big Salmon river. The names of the tributaries

of this creek that were staked are Livingstone, Cotton Eva, Salmon and Lake creeks. These creeks have been worked continuously since 1899, and they have produced altogether about \$75,000 a year. They will probably continue to produce this amount for some time. One feature of these creeks is the difficulty the miners have owing to the large boulders they find on bed-rock.

Kluane District.

In 1903 a discovery of gold was made in what is known as the Kluane district. This district lies about 150 miles in a westerly direction from the town of Whitehorse. It is a very large district and a great number of creeks were staked. The principal creeks, however, upon which gold in sufficient quantity to work profitably has been found, are Fourth of July, Burwash, Reid, Bullion and Arch. On nearly all the creeks in this district there is practically no soil on the surface, which is simply waste gravel from rim to rim, with an occasional patch of clay or sand. Since 1903 mining has been carried on upon these creeks continually, but not to a very great extent, as the creeks have not proven to be of much more value than what is termed a 'wage proposition.' The output so far has been about \$25,000 a year.

QUARTZ.

Quartz claims of value were first found within what is known as the Windy Arm district in 1904. The development of the Windy Arm properties shows a sufficient quantity of ore of working value to assure a permanent camp in this district. The showing of these properties has stimulated prospecting in the southern portion of the territory, and reports of new finds recently made are numerous. There is a very large expanse of country that has never been prospected, and there is every indication of discoveries being made that will make camps similar to that of the Windy Arm district.

The following is an outline of the development work which has been done on some of the principal quartz properties in the Windy Arm district:—

Montana.

An adit from the surface has been extended on the vein for a distance of 625 feet. From this work three winzes have been sunk 30 feet each. Two upraises have been made to the surface, also on vein: one 130 feet and the other 80 feet. A fourth winze has been sunk, which is really an extension of the 130-foot raise. This has been sunk 260 feet below the tunnel level, and at the 200-foot point drifts were turned north and south.

The approximate value of work done on this claim is about \$24,000. Eighty-five tons of ore were shipped to the smelter at Tacoma, Washington, and the return shows an average value of \$100 per ton.

An aerial Riblett tram has been built from the company's dock to the Montana group, a distance of about four miles, at a cost of \$90,000. On this group there are also a gasoline hoist, 50 horse-power engine for air compressor, 50 horse-power air compressor and three Sullivan air drills.

Mountain Hero.

This claim is also on the Montana vein. Cross-cuts have been made, of 90 feet and 285 feet, and an upraise of 90 feet and 265 feet of drifting. The total development work on this claim amounts to about \$11,000.

Uranus No. 1.

A cross-cut has been run 265 feet. On the vein there are five tunnels of from 15 to 220 feet, and one shaft on vein 53 feet. A great deal of open-cutting and stripping has been done, leaving the vein exposed for nearly 600 feet. The approximate value of development work so far is about \$10,000.

Joe Petty.

A shaft has been sunk 53 feet, from the bottom of which a drift has been run on the vein 50 feet east and 75 feet west. Three hundred feet east of this point a cross-cut is run 40 feet, cutting the vein, and a drift extended east on the vein 40 feet and north 110 feet. Five or six open-cuts have been dug exposing the vein for about 150 feet.

Three tons of ore were shipped last year to the smelter at Tacoma, Washington, and the return showed an average of \$208 per ton.

M. & N.

A tunnel has been driven on the vein for at least 60 feet, from which an upraise was driven to surface, 55 feet. Two tons of ore were shipped last year to the smelter at Tacoma, and returns showed an average of \$124 per ton.

Venus No. 1.

A shaft has been sunk 50 feet, and from the bottom of this a drift has been run 30 feet to the north and another the same distance to the south.

Venus No. 2.

A cross-cut, cutting the vein, has been run 120 feet, from which a drift was run north 95 feet and another south 130 feet; 168 feet lower down the mountain side a second cross-cut was driven 500 feet, at which point the vein was cut. The cross-cut has been extended 98 feet past the vein; a drift north on the vein 246 feet and south for 249 feet. There is an upraise to connect with first cross-cut, now 180 feet.

There is already a dump of about 50 tons of ore, and from assays it is expected to average \$70 net per ton. The approximate value of the work will be about \$30,000.

Vault.

One tunnel has been driven on the vein 265 feet and cross-cut at a point 120 feet. Another tunnel is now being driven on the vein and is now 142 feet long.

One hundred and eighty-two tons of ore have been shipped from 'Venus' No. 2, the ore averaging \$53 a ton; and 34 tons from the 'Vault,' which averaged \$55 per ton.

At the 'Vault' mine there is an auxiliary tram about 2,000 feet long, with one 6 horse-power gasoline engine for operating. There is also an aerial Riblett tram now under construction, 4,800 feet long, which will cost complete, \$12,000; also gasoline engine with fan, &c., for ventilating.

At the 'Venus' there is an aerial two-bucket Riblett tram, about 1,800 feet long. There are also one 50 horse-power gasoline engine for compressor, one 50 horse-power Leyner air compressor and five Sullivan air drills with full equipment. Also 1,500 feet of hydraulic pipe and Pelton wheel to operate air compressor; and gasoline ventilator engine, with fan, pipe, &c.; the equipment at this mine costing in the neighbourhood of \$20,000.

Humper No. 1, Humper No. 2, and Red Deer.

On these mines a shaft has been sunk 20 feet deep, and a drift run about 200 feet on the vein, and about 100 feet of stripping.

Twenty-five tons of ore were shipped from these mines to the smelter at Tacoma, and it is reported that exceptionally high values were obtained.

Venus Extension.

There is one shaft about 40 feet deep, and a drift of about 70 feet. Another shaft of 30 feet and drift of about 20 feet. There is a cross-cut of 25 feet and 40 feet of a drift on the vein. In this there is a winze of about 25 feet. A cross-cut

is now being driven to tap a vein 50 feet below bottom of winze, now 25 feet.

Between 8 and 10 tons of ore were shipped from Venus Extension, and exceptionally high values were reported.

Caribou.

On this claim there is a tunnel of about 90 feet on the vein, and from this a winze of about 80 feet, and a drift of 110 feet on the vein. This claim forms part of what is known as the 'Big Thing Group.' There have been considerable open-cutting and stripping as well as tunnelling on the other claims of the group.

Fifty tons of ore were shipped to Tacoma, and the return showed an average of \$47 per ton.

Little Johnnie.

One open-cut 25 feet and about 75 feet of stripping. Also one open-cut of 60 feet exposing Montana vein.

Thistle Group.

Thistle.—One shaft about 53 feet deep.

Aurora.—One tunnel about 60 feet long.

Columbian.—One tunnel about 40 feet long.

There are about five tons of ore on a dump, which will average about \$90 per ton.

Conrad Mountain Group.

One tunnel 127 feet long.

One tunnel 30 feet long.

One tunnel 12 feet long.

One tunnel 10 feet long.

About 50 or 60 feet of stripping.

So far there have been no shipments of ore from this group.

A group of claims have also been staked on the east shore



47.—Below Discovery Hunker Creek.

of Lake Marsh. Some of the ore on this group is reported to be worth \$100 per ton.

A group of quartz claims have also been staked on the right limit of Lake Laberge.

A group of claims have also been staked 12 miles southeast of Whitehorse. On this group is a shaft 80 feet deep, with 25 feet cross-cut. The ore assays \$4 to \$20 per ton.

Up to the present time there have been 1,600 quartz claims located in the Whitehorse and Windy Arm districts.

Though upwards of five hundred quartz claims have been recorded in the northern end of the territory, particularly in the Klondike district, and large sums have been expended in development work on the different groups of quartz properties by companies and private individuals, as well as aid given by the Territorial Government, yet the results have been somewhat disappointing, and quartz mining has not been carried on with so much enthusiasm during the past year. Practical quartz miners, however, have much faith in the future of the Klondike district, and believe that further development work will reveal abundance of the hidden treasure.

Prominent among the quartz properties in the northern part of the territory, are the Violet Ledge group and the Lepine group, upon which considerable development work has been done. On the left limit of the Yukon river opposite Dawson the North American Transportation and Trading Company have done considerable work on their quartz properties, a tunnel having been driven from the edge of the river into the rock for a distance of 50 feet. There are indications of a good body of ore, but values so far obtained are not such as would warrant treatment in Dawson. Were this ore within reasonable distance of a smelter, the mines would be valuable at the present time. Considerable ore has been taken out and shipped by the company, the cost of sending rock from Dawson to Seattle being not less than \$40 per ton plus smelter charges.

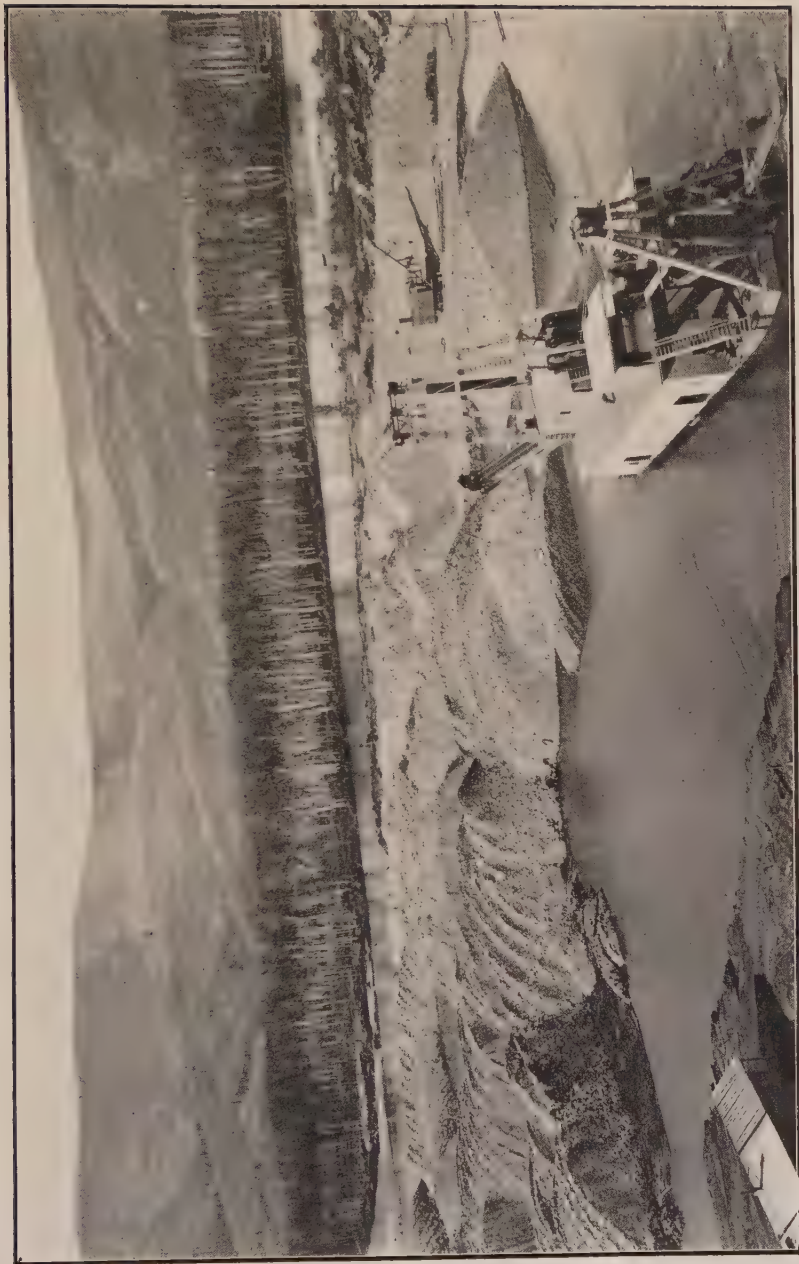
The company propose to develop the mines on a much larger scale in the near future.

The Yukon Milling and Dredging Company, with a capitalization of \$350,000, will erect in Dawson this year a stamp-mill, which has a capacity of 200 tons a day. This company will employ between 30 and 40 men, and expect that the mill will be continually employed crushing ore from the properties surrounding Dawson. In order to aid and encourage the development of quartz, the mill, which will be erected within the city limits, has been exempted from taxation for a period of five years.

DREDGING.

Mining by means of a dredge is considered as mining on a large scale, and outside the pale of ordinary placer mining. Quite a large number of leases have been issued for the dredging of submerged beds and bars of rivers in the Yukon, but very few dredges have been operated in the rivers. In 1900 a dredge was brought into the Yukon Territory, and used during that summer and the following summer on what is known as Cassiar bar, a bar on the Yukon river some distance above Selkirk. This dredge was not a success on Cassiar bar, and the following year it was taken to pieces and brought to Bonanza creek, where it was operated on Discovery and the adjoining claims both up and down stream. Though this was not considered a modern dredge, yet its operation on Bonanza was successful, and demonstrated the possibility of low-grade ground being worked at a profit that could not otherwise be worked.

In the summer of 1905 the Canadian Klondike Mining Company, Limited, installed a large dredge on the Boyle Hydraulic Concession, at the mouth of Bear creek. The approximate cost of this dredge, including the power plant, was \$300,000. The dredge is second in size only to the mammoth



Bear Creek Dredge at work, Aug. 14, 1906.

machine at Oroville, California, which handles more than 3,000 cubic yards of earth daily. This one is expected under the less favourable conditions presented by the frozen gravel of the Klondike to handle, in twenty-four hours, 2,000 cubic yards, digging 35 feet below the water surface, and throwing the tailings 22 feet high and back 90 feet. Each of the 65 buckets weighs 1,700 pounds; and the grizzly, 27,500 pounds; and the spud, which steadies the barge from the stern, 10 tons; while many other pieces weigh from 6 to 8 tons each. The hull of the barge measures 100 by 33 feet. The electric power is generated by three 150 horse-power boilers and a 600 horse-power Westinghouse-Parsons turbine engine.' Last year this dredge was operated 170 days. In California, where dredging operations are carried on, a dredge can be operated 365 days in the year. The fact that a dredge cannot be operated in the Klondike during the winter might be looked upon as a great disadvantage, but the conditions are more than sufficient to offset the short season. Owing to the continual daylight in the Yukon during the summer season, a dredge can be operated the whole twenty-four hours, or in other words from the beginning to the end of the summer without stopping. In the second place—and which is probably the most important to the investor—the values in the Yukon gravels are very much higher than anything to be found in the auriferous deposits of California, where this class of mining is carried on. In the Yukon, during the winter season, wood is cut and placed convenient to the dredge, the prospecting drill is used to locate the areas carrying high values, and other preparations are made for the golden harvest in the summer. In fact the prospecting drill can be used to best advantage during the winter season. The dredge belonging to the Canadian Klondike Mining Company has now been operating for two summers, and the best indication of the result of its operations is the fact that two other dredges of a similar capacity have been

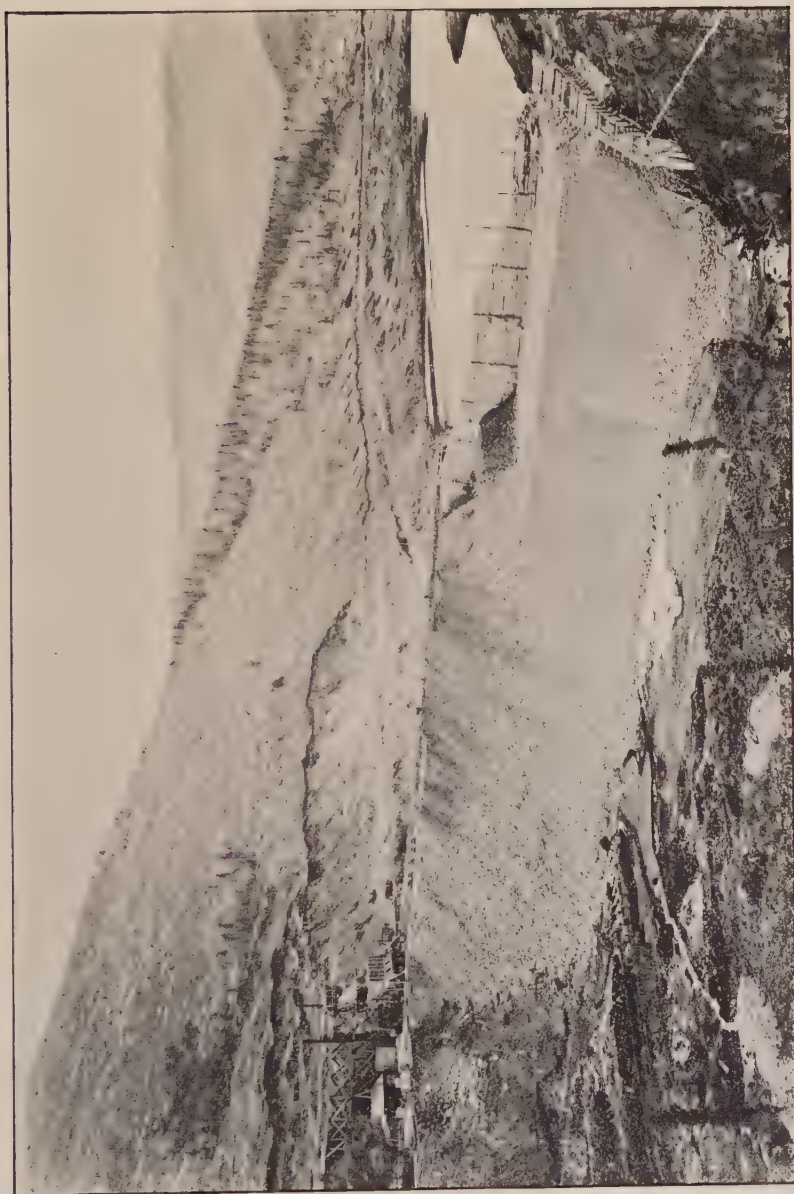
ordered by this company, which expects to have them in operation during the summer of 1908.

In the summer of 1905 a dredge was constructed at the mouth of the Klondike river by the Bonanza Basin Gold Dredging Company, and early in the summer of 1906 was moved on to a group of river claims owned by this company on the flat at the mouth of the river. This dredge has a practical capacity of 750 cubic yards per twenty-four hours, the size of the buckets is 6 cubic feet, and 150 horse-power is required for operation. The cost of installation was \$154,000. During the summer of 1906 this dredge worked at a disadvantage owing to the ladder being too long for the depth of the ground, and the quantity of dirt handled would have been greater had the ladder been the proper length. The motive power on this dredge was steam, but this year (1907) it is understood that arrangements have been made to substitute electricity for steam. It is also reported that the company proposes to instal another dredge on the property this year.

As a result of the success of these dredges many parties have been formed amongst the people of the Klondike district for the purpose of restaking the old creeks that had been staked in 1898 and 1899, but were abandoned because they could not be worked under the old methods. These parties go out and stake large blocks of claims adjoining one another on a creek, with a view either of forming a company for the purpose of purchasing a dredge to work their property, or to sell to any person who may be desirous of obtaining the ground for dredging. Nearly all the creeks formerly staked and abandoned have recently been restaked by these parties, but nothing further has as yet been done. Whether any of these creeks will prove to be of sufficient value to be worked by a dredge is extremely problematical, and depends largely on the depth and quality of the bed-rock, the most favourable ground for dredging being a shallow soft bed-rock. Leases, which have



No. 60—Below Discovery, Hunker Creek.



Bonanza Dam, Yukon Consolidated Gold Fields.

been issued for the dredging of the submerged beds and bars of rivers, did not provide for actual representation work, but for the installation of a dredge within a certain period and the payment of an annual rental. Ground, however, which has been staked as placer claims and upon which dredges are operating must be worked under the terms of the Yukon Placer Mining Act, and conditions as to representation and renewal of all such claims are similar to the conditions under which the individual miner operates.

The Yukon Consolidated Gold Fields Company have just completed the construction of three dredges near the mouth of Bonanza creek, for the purpose of working the creek claims the company have acquired in this vicinity. The company have also acquired water rights from the Twelvemile river, a small stream entering the Yukon about 18 miles below Dawson, and upon a tributary of this stream they have installed an electric plant for the purpose of supplying power to their dredges. The water to supply the power plant is taken from the Little Twelvemile river at a point about $4\frac{1}{2}$ miles from its mouth. The water conduits consist of $1\frac{1}{2}$ miles of ditch and the remainder of flume, having a capacity of 2,300 inches. The water will have a direct pressure of 674 feet on the wheels, which will generate 1,650 horse-power. The pipe conducting the water from the penstock to the wheels is 30 inches in diameter, and imbedded in a trench on the hillside.

The transmission line from the station to a point on Bonanza creek at 79 below Discovery is 30 miles in length and carries a tension of 33,000 volts. It is estimated that electricity will be delivered on Bonanza creek with ninety per cent efficiency. At 79 below Discovery on Bonanza is situated a substation, controlling the electrical energy to be used on Bonanza creek. The cost of the power plant is reported to be in the neighbourhood of \$200,000.

In the Fortymile district the Yukon Gold Dredging Com-

pany of Alaska have one dredge in operation, and contemplate building another dredge this summer.

The North American Transportation and Trading Company also propose to build a dredge to work the creek claims within their concession on Miller creek.

Writing of the possibilities for dredging in the Yukon Territory, Mr. J. Moore Elmer, a member of the American Institute of Mining Engineers, says:—

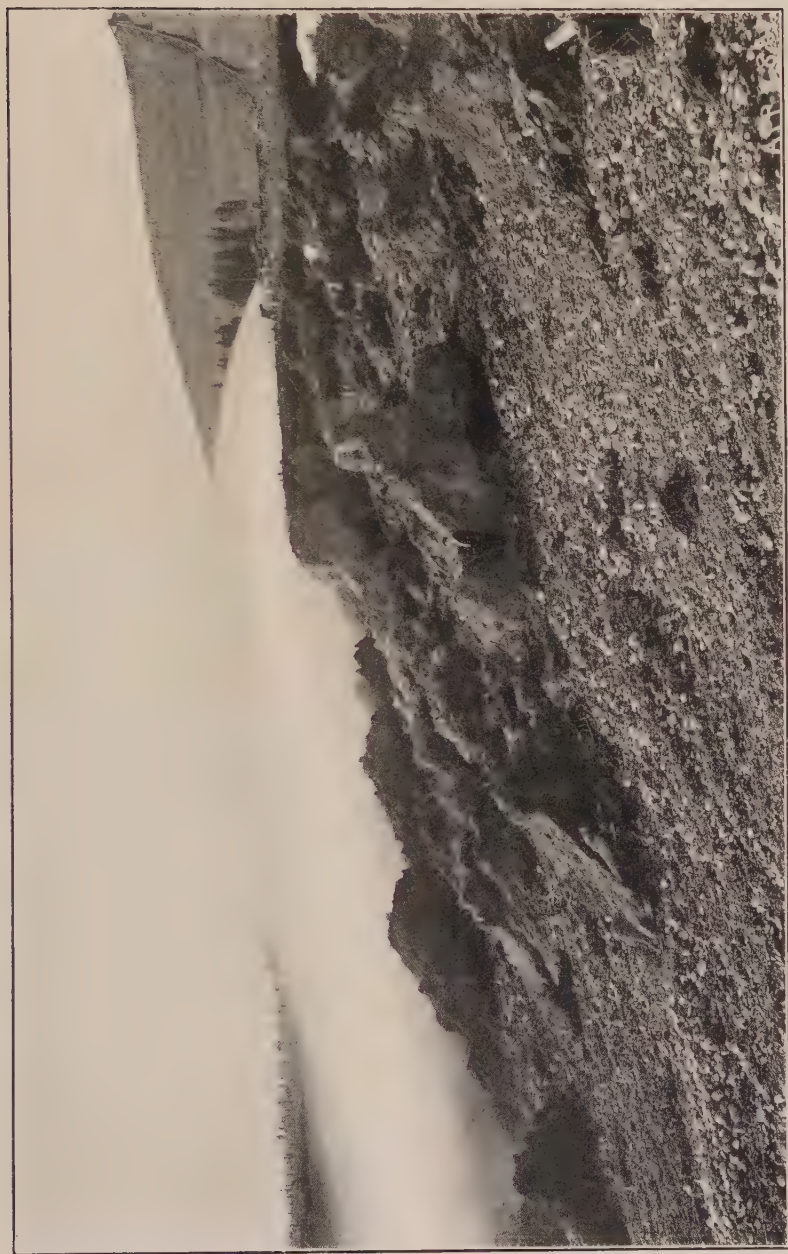
‘As a result of six years’ experience, operating a three-foot Risdon dredge in the Klondike district, and by careful observation during that period of the auriferous deposits of the country, and the climatic and other conditions peculiar to it, I am convinced that the vast Yukon basin from the Rocky mountains to the Behring sea contains immense areas in which this form of mining can be profitably carried on

‘There are countless thousands of acres in the Yukon basin that are suitable for dredging, and that would pay handsome returns on the investment if judiciously made. The country is capable of thorough investigation, and it is the thorough and intelligent investigator that the country needs. When the true conditions become generally known, by reason of such investigation, I believe I am not too optimistic in predicting that the number of dredges in operation in the Yukon will be limited, for a number of years, only by the capacity of the manufacturers to fill orders.

‘In order to succeed with a dredge in the Yukon the first desideratum is careful selection of the ground as to its suitability for the purpose; then, given a dredge properly constructed to meet the conditions under which it is to be operated, and intelligently managed, the Yukon presents an almost limitless field for the profitable investment of capital in mining gold by the dredge process.’

HYDRAULICKING.

Ever since the discovery of the Klondike gold-fields there has been, during a certain period of the summer season, a scarcity of water, which has affected the mining industry to a much greater extent as the richer creek claims of the district were worked out and miners turned their attention to the high-



Hydraulic Mining on Klondike River within two miles of Dawson.

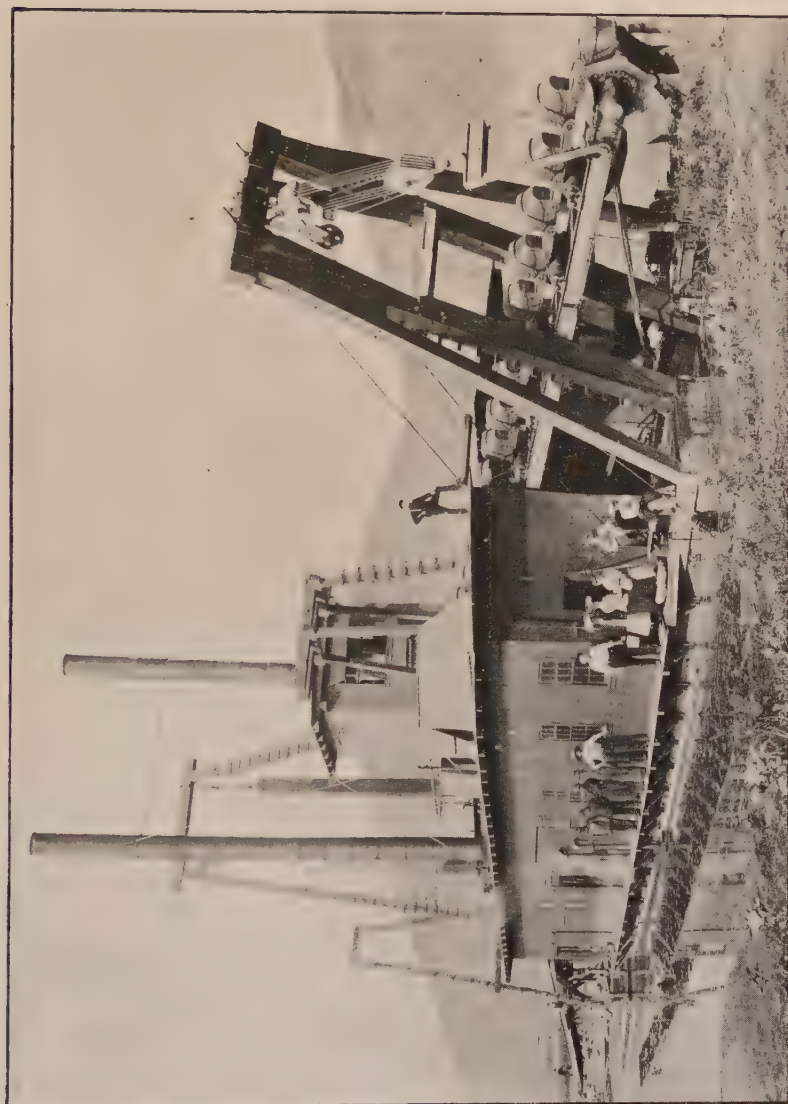
level gravels. On Nos. 6 and 7 below Discovery on Bonanza creek an expensive pumping plant was erected at a cost of \$120,000. This plant lifted the water from Bonanza creek and delivered it under the high pressure required for hydraulic mining on the face of the auriferous gravels on Cheechaco Hill. The expenditure incurred by such a task was very great. After several operators had tried and failed in the experiment of pumping water from the creeks to the benches, on account of the heavy operating expenses, it was eventually found that the only practical method of working the bench gravels was by a system of gravity water. About this time several large mining operators on Bonanza began to realize that an immense quantity of water flowing into the gulches and mountain streams in the vicinity of the mines during the spring thaw might be profitably utilized for hydraulic purposes, if large reservoirs were constructed to retain and conserve the water, which could be used during the dry season for mining operations. In 1905 the Dominion Government sent an engineer to investigate and report on the feasibility of a water scheme from the headwaters of the Klondike. The construction of impounding dams, however, at different points on Bonanza creek, the granting of water rights from gulches and other mountain streams to corporations which are making gigantic preparations to mine the high-level gravels in the district on an extensive scale, and the acquisition by these corporations of large numbers of claims on Bonanza and Hunker creeks and their tributaries, have obviated the necessity of subsidizing or undertaking as a public utility the construction of a large water scheme for the Klondike district.

On Bonanza creek there have been constructed three impounding dams, one of which will be completed this summer on No. 57 above Discovery, and has a capacity for 354,000,000 gallons of water. This dam was constructed by the Yukon Consolidated Gold Fields Company. The source of supply is

the seepage water of Bonanza creek above the point of construction, and embraces an accumulating area of 35 square miles. The water will be taken from the dam and conducted by means of two ditches, each ditch having a capacity of 1,000 inches, to the hills and benches below Gold hill, to Gold hill and the hills and benches above Grand Forks. The water is under a sufficient pressure for hydraulic purposes on all the hills and benches. As Gold hill is on the opposite side of the stream along which the water is to be conducted, the valley is crossed by means of an inverted syphon. This syphon has a capacity of 1,000 inches. It is 20, 22 and 24 inches in diameter, and the water delivered on the rim of Gold hill has a pressure of 150 feet. Two monitors, 3 and 4 inch, are directly connected with the syphon. The cost of the construction of this dam was between \$250,000 and \$300,000.

The next impounding dam of importance is situated on Adams creek, about three and a half miles above its mouth. This dam was built by the lessees of the Matson and Doyle Concession, and has a capacity of fifty-eight million gallons. The area within which this water is accumulated is between six and eight square miles. The water from the dam is conducted along the left limit of Adams creek, and used under a pressure of 175 feet on the hills and benches on the left limit of Bonanza between the mouth of Adams and Boulder creek, a distance of three miles. The water is conducted entirely by flume, which is 24 by 36 inches, having a capacity of 600 inches of water. On Adams hill three monitors of $2\frac{1}{2}$, 3 and 4 inch nozzle diameter are used. This dam cost approximately \$75,000.

In 1906 the Yukon Consolidated Gold Fields Company commenced the construction of an immense ditch from a point on the main Twelvemile river to Grand Forks, which is situated at the junction of Bonanza and Eldorado creeks. The water to be conveyed by this ditch, which is between 60 and 70



Bonanza Basin Dredging Co., near Dawson, Y. T.

miles in length, is intended to mine by the hydraulic process the hill and bench gravels of Bonanza, Eldorado and Hunker creeks and their tributaries. The width of the ditch at the bottom is 12 feet and at the top 20 feet; the greatest depth of excavation being 12 feet, and an average depth of 4 feet. There will be 25 miles of flume and pipe, the cost of flume will be \$20,000 per mile, and about 40 miles of ditch, which is excavated at a cost of \$8,000 per mile. Steam shovels are used for excavating, and the cost is 15 cents per cubic yard. The quantity of timber in the flume is 1,000 feet B.M. in every 16 feet of flume. The flume is 7 by 6 and has a capacity of 10,000 miner's inches. The piping consists of heavy steel pipes where long and deep depressions have to be crossed, and redwood stave pipes where the pressure of the water does not exceed 125 feet. The inverted syphon to be installed across the Klondike river will be 49 inches in diameter and 15,000 feet in length. The greatest pressure on this pipe at the bottom of the valley will be a little over 800 feet. The redwood stave pipe is 48 inches in diameter, and will be $2\frac{1}{2}$ miles in length.

In 1906 the Yukon Consolidated Gold Fields Company also built a reservoir on a bench on the right limit of the Klondike river, opposite the mouth of Bonanza creek. The water is conveyed from Moosehide creek along its left limit, then along the right limit of the Yukon river and across the face of the mountain behind Dawson by ditch and flume—accumulating along the route the seepage water from the hills—to the reservoir, which is situated 260 feet above the gravels. On the bench gravels between the reservoir and the Klondike river the water is being applied at the present time by two monitors.

On the Miller Creek Hydraulic Concession the North American Transportation and Trading Company constructed nine miles of water conduits, having a capacity of 1,200 inches to hydraulic the creek bed of Miller creek. Operations have been carried on in the creek bottom by the use of an

hydraulic elevator, which system has been found unsatisfactory on account of the insufficient water supply. As has already been pointed out, this company contemplate the construction of a dredge on Miller creek, and do not propose to resume hydraulic work until such time as the dredge has worked the creek bottom to the desired point of operation, when the benches will be worked by hydraulicking, and the tailings can be dumped on ground which has been worked out. To carry on hydraulic operations it will be necessary to construct a ditch of about 25 miles, and from 400 to 500 inches of water will be available from Miller, Bedrock and Pat Murphy creeks, from which the company have obtained water rights appurtenant to their property.

Besides the hydraulic operations which have already been described, there is considerable hydraulicking on a smaller scale on Bonanza and Hunker creeks. In nearly every case, however, the supply of water is limited, and hydraulic mining can only be carried on during the early and latter part of the summer, at which times the spring and fall rains furnish a supply of water for this class of mining.

COPPER.

Within a short distance of the town of Whitehorse is a large number of copper claims, which have been developed to a very considerable extent. In 1905 the American Institute of Mining Engineers made an excursion into British Columbia, Alaska and the Yukon Territory, and the following extract concerning the copper properties at Whitehorse is taken from a report of the excursion by R. W. Raymond, Secretary of the Institute:—

‘The auriferous copper-belt of Whitehorse, as far as now known, about 16 miles in a curve around the town, presents a considerable number of promising “prospects” of high grade ore, some of which will doubtless be successfully developed in the near future, especially if (as seems to be beyond doubt)

the present progressive world demand for copper shall continue. The reported offer of a rate of \$5 per ton for ore in sacks, or \$6 in bulk, from Whitehorse to the Tyee Company's smelter at Ladysmith, on Vancouver island (a distance of 112 miles by rail and 900 miles by water), leaves some margin of profit on the mining and shipment of rich copper ores; and this operation may be expected to promote the development of mining on a larger scale, and the realization of economies in all the departments (including transportation) which will make ores of lower grade profitable.

'Up to the present time, about 500 locations have been made in the belt, and about 200 kept valid by annual work. The greatest depth of workings is about 189 feet, and the total shipments of ore have been about 1,000 tons, ranging in value (for 100-ton lots) from \$16 per ton for ore not sorted to 46.64 per cent of copper and 11 ounces silver and \$2.58 gold per ton. One lot is reported to have yielded a net profit, over cost of freight and treatment, of \$32 per ton.

'The prevailing mineral in these ores, so far, is bornite, carrying gold and silver. Since this mineral is generally recognized as a secondary product, not likely to continue to great depth, the nature and value of the deeper parts of the deposits can only be determined by development, for which, fortunately, the rich bornite of the upper levels may furnish the means.'

During the past year twenty-five men have been employed on the principal copper properties adjacent to Whitehorse. The following is a brief description of the development work up to date:—

'Pueblo.'—Open-cut 40 feet wide.

'Copper King.'—400 feet shafts and tunnels.

'Arctic Chief.'—150 feet tunnelled, 52 foot shaft, stope 30 by 20.

'Carlisle.'—90 foot shaft.

'Grafter.'—125 foot shaft and cross-cut.

'Keewenaw.'—50 foot shaft.

'Valerie.'—50 foot shaft.

Last year 200 tons of ore were taken from the 'Carlisle' and 2,000 tons from the 'Pueblo.' This ore was shipped to the smelter on Vancouver island.

Several copper claims have been located near the head of White river, from which prospectors have brought large pieces of fine specimens of placer copper. These claims, however, are near to the boundary line, and miners usually apply for record in both the Yukon Territory and Alaska.

COAL.

Tantalus Mine.

This mine is situated on the left bank of the Yukon river, about 201 miles south of Dawson. During the past winter preparatory work has been going on at the mine, such as driving tunnels and making rooms for working; 120,000 feet of prop lumber has been prepared, and a much larger wharf will be built this spring. The mine is situated so close to the river that it is difficult to find space for the construction of bunkers and wharfs. Analyses of this coal show:—

Fixed carbon.. . . .	65 to 70 per cent.
Ash...	10 to 15 “
Water...	1 to 3 “
Volatile...	24 to 12 “

The mine has been leased to H. H. Phillips and associates for a period of ten years, and it is expected that about forty miners would be employed during the coming summer. The coal has been used on the steamers of the White Pass Company, plying between Whitehorse and Dawson, for the last two years, and the output so far is estimated as follows:—

1903.. . . .	41 tons.
1904.. . . .	640 “
1905.. . . .	3,000 “
1906.. . . .	5,000 “

It is expected that the output for the present year will amount to 12,000 tons, or possibly more; 5,000 tons of this amount being consumed by the steamers of the White Pass Company.

Tantalus Butte Mine.

This mine is also situated on the Yukon river, about two miles east of the Tantalus mine. There has been no coal taken out, but three seams of $5\frac{1}{2}$, 7 and $7\frac{1}{2}$ feet respectively are being opened up. There is a gravel bank on the face of this mine, through which a tunnel of 230 feet will have to be driven before coal can be reached. The proprietor of this mine states that the coal-measures can be traced almost to Whitehorse. The following is an approximate analysis of samples of coal taken from the Tantalus Butte mine, namely:—

Fixed carbon (on surface)	55	per cent.
Ash	6	“
Water	10	“
Volatile	29	“

Twelvemile.

Lignite coal mines have been staked in the Twelvemile district, the coal containing about 8 per cent ash and 50 per cent fixed carbon. These locations are about seven miles from the mouth of the Twelvemile.

Five Fingers.

This mine yields coking coal, which is only used for smelting purposes, and is the only coal of this kind so far discovered in the Territory. The seam is about $3\frac{1}{2}$ feet. Three men worked in the mine during the past winter, and one tunnel has been driven 700 feet.

Mr. Camsell, in his report on the Peel river, 1906, reports deposits of lignite coal, twelve miles below Mount Deception, where a section of tertiary rocks is exposed. ‘This shows six feet of lignite, associated with beds of clay and sandstone, overlaid by glacial drift.

‘The lignite is still in a primary stage of development, and shows the twigs and leaves of which it is composed, and even some blebs of resin. This seam of lignite is again exposed

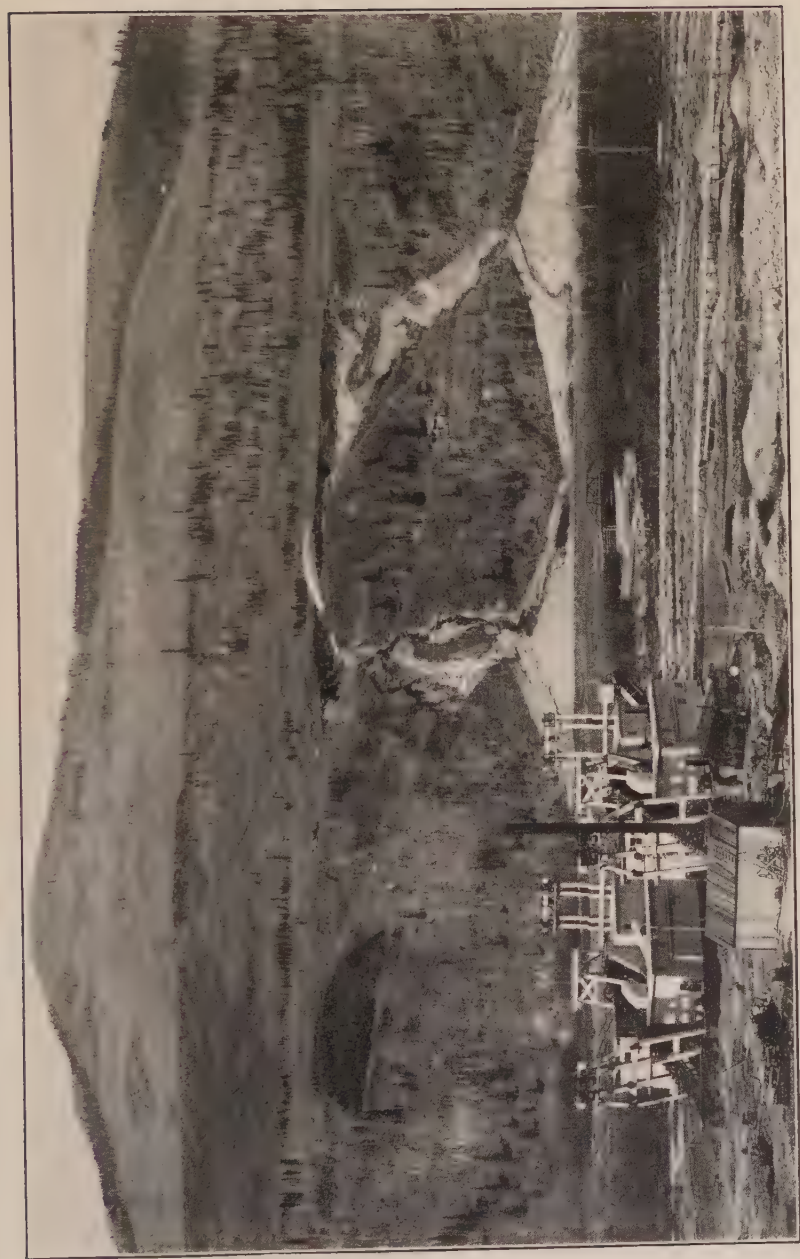
two miles below, overlaid by six feet of rusty gravels, and resting on a bed of clay. At the base of all is a soft and very fine grained sandstone, which is also very porous. The lignite, when dry, burns fairly readily, giving off the odour of burning resin and leaving a great deal of ash.'

Sourdough Coal Mine.

About six miles below Fortymile and fourteen miles from the Yukon river on its right bank, is the Sourdough coal mine, which is being worked by the Sourdough Coal Company. The mine was purchased last fall by this company, who took out over 2,000 tons of coal, which was shipped to Dawson before the close of navigation and sold during the winter at from \$15 to \$20 per ton. Fifteen men have been employed all winter, and extensive preparations have been made for a large output during the coming summer. Thirty men are at present working in the mine, and a larger number will be employed during the summer. There are three seams of 8, 12 and 20 feet respectively. There is an incline shaft of 240 feet, which has been run at an angle of forty-five degrees.

A railroad has been constructed from the mines to the Yukon river, a distance of fourteen miles, at a cost of \$400,000, several large bridges having to be erected along the route. From this point the coal is brought to Dawson by the company's steamers.

If arrangements can be made with the different companies operating and contemplating the installation and operation of dredges in the Klondike and Fortymile districts, the Sourdough Coal Company propose to instal a large power plant at the coal mines to furnish power to dredges, as well as light to Dawson and Fortymile. Electricity is being furnished in Dawson at the present time by a plant belonging to the company, who have already contracted to furnish power to dredges in the Klondike district, and as soon as the demand for power exceeds the capacity of the present plant, a large



Dredges on No. 104 below on Bonanza. Hydraulic plant in operation on hill in the distance.

plant will be constructed at the coal mines on Coal creek. A preliminary survey has already been made with the view of constructing a trunk line from the mines to Dawson.

Besides the power and light which this company will be prepared to furnish, they also contemplate the introduction of a system of heating by electricity as a substitute for fuel. So far the principal fuel in Dawson has been wood, and during the past few years a considerable quantity of coal has been used. Though no definite arrangements have been made, yet the company are of the opinion that if such a system can be introduced it will be possible to furnish the electricity for this purpose at a cheaper rate than either coal or wood can be obtained. It is estimated that coal can be mined for 50 cents per ton, and as the company propose to instal a plant at the mine, a saving of from \$8 to \$10 per ton on transportation will be saved. The expenditure for fuel to generate the power will, therefore, be reduced to a minimum, and the company will be able to supply electricity at a much reduced rate.

Steamers operating on the lower river can obtain coal from the bunkers at the terminus of the company's railroad at \$6 per ton.

MINING DISTRICTS.

The Territory is divided into the following mining districts:—

Dawson Mining District.

All that portion of the Yukon Territory not included in any other district, as hereinafter described, and which may be more particularly described as follows:—

Commencing at the most northerly limit of the 141st meridian, thence southerly along said meridian; thence along the northerly, easterly and southerly limits of the Sixty mile mining districts; thence along the 141st meridian; thence along the northerly limit of the Kluane mining district; thence

along the northerly and easterly limits of the Whitehorse mining district; thence along the 60th parallel of latitude; thence along the easterly limit of the Yukon Territory; thence along the southerly, westerly and northerly limits of the Duncan mining district; thence along the easterly and northerly limits of the Yukon Territory to the point of beginning.

Duncan Mining District.

All that portion of the Yukon Territory lying within the watershed of the Stewart river and its tributaries above the mouth of and including the McQuesten river.

Sixtymile Mining District.

All that portion of the Yukon Territory lying within the watershed of the Sixtymile river above the mouth of and including Boucher creek.

Conrad Mining District.

All that portion of the Yukon Territory tributary to Lake Bennett, Lake Nares, Lake Tagish and Lake Atlin.

Whitehorse Mining District.

All that portion of the Yukon Territory tributary to the Lewes river on its right limit above a point one mile above the mouth of Little Salmon river, and on its left limit above a point one mile below the mouth of the Nordenskiold river, excepting, however, from within its boundaries, the district described as the Conrad mining district.

Kluane Mining District.

All that portion of the Yukon Territory tributary to the White river, above and including the Nesling river, and all that portion of the said Territory tributary to the North Pacific ocean lying to the south of that portion of the Territory tributary to the White river, above and including the Nesling river.



Hydraulic mining on Bonanza Creek.

Values of Gold Dust.

The following is an account of the value of gold dust from some of the most important creeks in the Yukon:—

	Per oz.
Bonanza creek, from Discovery to 7 below, from..	\$15.93 to \$16.16
Bonanza creek, from 7 to 47 below.....	16.14 to 16.45
Bonanza creek, from 57 to 105 below, from.....	16.00 to 16.45
Bonanza creek, from Discovery to 7 above.....	15.79 to 16.80
Bonanza creek, from 8 to 43 above, from.....	17.01 to 17.09
Eldorado creek, from mouth to 36, from.....	14.97 to 16.10
Hunker creek, from Discovery to 32 above, from..	16.95 to 17.28
Hunker creek, from Discovery to 28 below, from..	17.39 to 17.65
Hunker creek, from 50 to 75 below, from.....	16.20 to 17.17
Last Chance creek, from mouth to 15 above, from.	14.32 to 15.40
Dominion creek, from Upper Discovery and above.	16.62 to 17.10
Dominion creek, from Upper Discovery to Lower Discovery.....	16.75 to 16.95
Dominion creek, 243 below to 256, from.....	17.32 to 17.92
Gold Run Creek, from mouth to 12, from.....	17.64 to 17.70
Gold Run creek, from 46 to 70, from.....	17.84 to 18.00
Steep creek	19.55

SYNOPSIS OF REGULATIONS.

Placer Mining Act.

Any person eighteen years of age or over is eligible to stake out and obtain entry for a placer mining claim in the Yukon Territory. A placer claim on a creek, which means any natural watercourse whether usually containing water or not, shall not exceed in size five hundred feet along the base line by one thousand feet on each side of such line. Claims situated elsewhere than on a creek shall not exceed five hundred feet in length by one thousand feet. A person locating the first claim on any creek, hill, bench, bar or plain shall be entitled to a claim one thousand five hundred feet in length, and to a party of two discoverers two claims, each of one thousand feet in length.

A claim is marked by two legal posts on the base line at each end of the claim, each of which posts shall give information as to the name of the claim, its length, the date of staking and the name of the locator.

Application for a claim shall be made to the Mining Recorder for the district within ten days after location, if it is within ten miles of the Recorder's office. One extra day is allowed for every additional ten miles or fraction thereof.

A person having received a grant for a claim is entitled to hold it for the period of the grant with the absolute right of renewal, provided work is done on the claim each year to the value of at least \$200, and evidence of such expenditure furnished within fourteen days from the expiration of the period covered by the grant.

Claims, however, may be grouped, and upon the owners thereof filing a deed of partnership permission may be granted to perform on any one or more of such claims all the work required to entitle such owners to renewal grants for each claim. Claims grouped may be made renewable by the Mining Recorder on the same day.

No person shall receive a grant of more than one placer claim on each separate creek, hill, bench, bar or plain, except by purchase or by recording an abandonment of the claim held.

Disputes between owners of claims as to distribution of water, boundaries and dumping may be heard and determined by a board of arbitrators appointed by the owners of the property. The owner of a claim may, upon complying with certain conditions, deposit tailings upon an adjoining claim.

Royalty at the rate of two and one-half per cent on the value of the gold shipped from the Yukon Territory shall be paid to the Comptroller. Gold to be valued at \$15 an ounce.

Fees for a grant of a claim for one year.	\$10
For five years.	70
For a renewal.	15
For abandonment.	2

Diversion of Water for Mining Purposes.

Every person owning a claim is entitled to the seepage water on his claim and to the use of so much of the water

naturally flowing through or past his claim, and not already lawfully appropriated, as may be necessary for the due working of the claim.

An applicant for a water grant must, for a period of twenty days previous to making application, post notice thereof, giving full information, at the point of diversion, on the land to be operated, on each person's land crossed, and in the office of the Mining Recorder, and a copy of this notice should be forwarded to the Gold Commissioner.

The price charged by the holder of a water grant with the privilege of selling shall be subject to the control of the Commissioner of the Territory.

The Commissioner may also grant permission to impound for mining purposes the surplus waters of any creek or gulch, and for that purpose he may withdraw from mining entry any worthless ground required for a reservoir site.

The fees charged for a grant of water are:—

For 50 inches or less.....	\$10.00
From 50 to 200 inches.....	25.00
From 200 to 1,000 inches.....	50.00
For each additional 1,000 or fraction.....	50.00

Dredging Regulations.

An applicant may obtain a lease to dredge for gold, silver and platinum throughout a continuous extent of ten miles of the bed of a river in the Yukon Territory, but not more than one lease can be issued in favour of an applicant.

'River' means a stream of water the bed of which is of an average width of 150 feet throughout the portion sought to be leased, of which fact the Gold Commissioner shall be the judge, and 'river bed' means the bed and bars of the river to the foot of the natural banks.

The lease shall be for a term of fifteen years, renewable from time to time provided the leasehold has been efficiently operated, but has not been fully mined out, and provided the regulations have been complied with.

The lease shall be subject to the rights of all persons who received entries for claims prior to the issue of such lease.

Within three years from the date of the lease the lessee shall have a dredge of sufficient capacity on his leasehold and shall operate the same during forty days of ten hours each in every year after the third year, and furnish satisfactory proof of such operation.

A rental of \$100 per mile of river leased is charged for the first year, and \$10 a mile for each subsequent year.

The lessee may obtain permission to cut, free of dues, such timber as may be necessary for the purposes of his mining operations.

The lessee is not allowed to interfere with the free navigation of the river, or with the construction of roads, ways, bridges, drains or other public works.

The royalty on gold produced from dredging operations is the same as that on gold produced from placer mining claims.

Quartz Mining Regulations.

Any person eighteen years of age or over, who has discovered mineral in place, may locate a claim not exceeding fifteen hundred feet in length by fifteen hundred feet in width, by marking it with two legal posts, one at each end of the line of the lode or vein, and marking out the line between such posts. Upon each post should be marked the name of the claim, the name of the person locating and the date, also the number of feet lying to the right and to the left of the location line.

The claim shall be recorded with the Mining Recorder for the district in which it is situated within fifteen days after the location thereof, if located within ten miles of the Recorder's office; one additional day will be allowed for such record for every additional ten miles or fraction thereof. In the event of a claim being more than one hundred miles from a re-

recorder's office, and situated where other claims are being located, the locators, not less than five in number, may appoint a recorder, but if the latter fails within three months to notify the nearest Government Mining Recorder of his appointment the claims which he may have recorded will be cancelled.

The fee for recording a claim is \$5.

An expenditure of not less than \$100 in mining operations must be made on the claim each year, or a like amount paid to the Mining Recorder in lieu thereof. The survey of the claim, under proper instructions, will be accepted as expenditure during the year in which the survey is made. When \$500 has been expended or paid in connection with a location the locator may, upon having a survey made, and upon complying with certain other requirements, purchase the land at the rate of \$1 an acre.

The Minister of the Interior may grant a location for the mining of iron and mica, not exceeding one hundred and sixty acres in area, provided that should any person obtain a location which is subsequently found to contain a valuable mineral deposit other than iron or mica, his right to such deposit shall be restricted to the area prescribed for other minerals, and the remainder of the location shall revert to the Crown.

The Minister may also grant locations for the mining of copper in the Yukon Territory, each location to consist of an area not exceeding one hundred and sixty acres in a square block. The boundaries of each location shall be due north and south and due east and west lines, and not more than one area shall be granted to any one person within a district of ten miles. The grant of such location for the mining of copper shall not give to the grantee any right to any other minerals excepting minerals that are combined or mixed with copper or copper ore, but in no case shall it include free milling gold or silver.

The annual expenditure in mining operations on iron,

mica and copper claims of excessive size shall be \$200, and the fee for entry and renewal of such copper locations shall be \$20.

The patent for a mineral claim in the Yukon Territory shall reserve to the Crown for ever the same royalty upon the products of the location as is provided or which may hereafter be provided in the case of placer mining claims in that Territory.

The collection of royalty, however, may be abolished on the gold produced from any quartz mining claim or group of such claims in respect of which a sufficient expenditure has been incurred within a given time in installing and putting into operation a suitable plant for milling or otherwise treating the ore, and provided such plant is capable of milling or otherwise treating not less than five tons of ore per day for every claim in respect of which such plant is installed.

The output of copper from any mining location or group of locations will also be exempt from the payment of royalty, provided a sufficient expenditure has been incurred within a certain time in the erection of a smelter or other plant for the reduction of the copper or other metals in connection with such location or group of locations.

All the rights and privileges which were accorded a free miner under the quartz mining regulations may be exercised and enjoyed by any person of eighteen years of age or over without taking out a free miner's certificate.

Petroleum and Natural Gas.

The Minister of the Interior may reserve for an applicant, who has machinery on the land, to be prospected an area of 1,920 acres for such period as may be decided upon. Should the prospector discover oil or gas in paying quantities, and satisfactorily establish such discovery, an area not exceeding 640 acres, including the oil or gas well will be sold to him at

the rate of \$1 an acre, and the remaining 1,280 acres reserved will be sold at the rate of \$3 an acre. The Minister may also make a preliminary reservation of a like area of land for a period of four months, for the purpose of allowing an applicant sufficient time to instal on the land the required machinery. A fee of \$100 shall be charged for such reservation. A royalty at such rate as may be specified by order in council will be levied and collected on the sales of the petroleum.

Disposal of Water for Power Purposes.

The Minister may grant for a term not exceeding twenty years the right to use the water from any stream or lake in the Yukon Territory for the purpose of generating power, and the right to transmit, sell or use the power so generated.

Prior to making application notice shall be posted for a period of sixty days at the point of diversion, at the place where the power plant is to be constructed, and in the office of the Mining Recorder. This notice should contain the name of the applicant, the name of the stream or lake, the point where water is to be returned to the stream or lake, the difference in altitude between the point of diversion and point of return, means by which power is to be generated, number of inches applied for, purpose for which power is required, locality where water is to be sold, and date of posting.

Upon satisfactory proof being furnished as to the posting of notice, of the correctness of the statements made therein, and of the ability of the applicant to utilize the power expeditiously; and upon a report from the Government Mining Engineer as to the volume of the unrecorded water available for diversion, a lease may be issued for such quantity as may be decided upon. The fees charged are in proportion to the quantity diverted.

Coal Lands.

Coal mining rights, which are the property of the Crown, may be leased for a term of twenty-one years at an annual rental of \$1 an acre. Not more than 2,560 acres shall be leased to one applicant.

Application for a lease shall be made to the agent of the district in which the rights applied for are situated, and the tract applied for shall be staked out by one or other of the following methods:—

(a) By planting at one angle of the tract applied for a post four inches square and standing not less than four feet above the ground, upon which shall be inscribed the angle represented, the name of the applicant, the date of the application, and the length and direction of the boundaries. The tract must be rectangular in form, and the boundaries must be due north and south and east and west lines. A description by metes and bounds of the tract applied for to be furnished with the application.

(b) If, however, the applicant desires to follow a coal seam the tract shall be marked by two posts of the above dimensions, bearing notices, placed one at each end on the line of the seam, and the location shall not exceed 21,120 feet in length. The line between the posts must be clearly marked.

The length of the tract staked shall not exceed four times the breadth. Notice of application shall be conspicuously posted on the tract applied for, and application shall be filed with the agent within thirty days after staking, accompanied by an affidavit showing that the requirements of the regulations have been complied with. Each application shall be accompanied by a fee of \$5, and a plan showing the position of the tract, and a royalty shall be paid on the merchantable output of the mine at the rate of five cents per ton.

The lease shall include the coal mining rights only, but the lessee may be permitted to purchase whatever available surface rights may be considered necessary at the rate of \$10 an acre.



A VIEW ON THE WHITE PASS R.R. NEAR WHITE PASS SUMMIT

Land.

Every person who is the sole head of a family, and every male who has attained the age of eighteen years, shall be entitled to obtain homestead entry for 160 acres of agricultural land in the Yukon Territory. Entry shall not be granted for lands valuable for timber, and such entry shall not give the holder thereof any right to the minerals under the land.

Homesteads,* when located on a water front, shall be marked by two legal posts, one at each end of the front boundary, and such frontage shall not exceed forty chains. A homesteader shall take possession and commence residence on the land within three months from the date of entry, and at the expiration of two years, upon having a survey made and upon submitting evidence that he has resided on the land during the months of May, June, July, August, September and October in each year, and brought at least ten acres under cultivation and erected a habitable house thereon, he will be entitled to receive a patent for the land homesteaded.

Applications for lands for purposes other than agriculture should be made to the Crown Timber and Land Agent for submission to the Commissioner of the Territory, who is empowered to dispose of the same at a price varying from \$1 to \$10 an acre, one-half of the purchase price being payable at the time of the sale and the balance in twelve months, with interest at five per cent. Such lands are sold subject to the minerals which may be found thereunder, and if the land is at any time valuable as a townsite then the Government shall own absolutely one-third of the blocks of lots in such townsite, and the sale of such blocks will be by public auction.

Leases may also be obtained of lands for agricultural and other purposes.

Timber.

Permits may be granted by the Crown Timber and Land Agent, with the approval of the Commissioner of the Terri-

tory, to cut timber within certain specified districts, upon payment of an office fee of \$5 and dues on the timber cut at the rate \$4 per thousand feet B.M., and of ten per cent ad valorem on the products of the berth not enumerated.

In such districts as the Commissioner may designate permits may also be issued to cut, free of dues, logs for the erection of roadhouses and for firewood to be used therein.

Any person who is bona fide settled upon land which he is using for agricultural or grazing purposes may be granted a permit, free of dues, to cut such timber as he may require for use on his own land.

Grazing and Hay.

Leases of grazing lands may be issued for a term of ten years, at an annual rental of \$100 per square mile. In unsurveyed territory the applicant shall mark one corner of the ground applied for by a legal post, and lay off the tract from such corner.

Leases of hay lands shall be for a term of ten years, at a rental of fifty cents an acre per annum. Permits to cut hay may also be obtained from the Crown Timber and Land Agent, upon payment of a fee of \$2.50 and dues at the rate of \$3 a ton.

Water Fronts.

Leases of water fronts on rivers in the Yukon Territory may also be obtained upon application to the Commissioner. The term of the lease is fifteen years, and the rental varies from \$1 to \$5 per foot frontage according to the position of the tract sought to be leased.

SCHEDULE OF REPRESENTATION WORK UNDER SECTION 27 OF THE
YUKON PLACER MINING ACT TO TAKE EFFECT JANUARY 1,
1907.

Shaft Sinking.

For first ten feet in depth, \$2 per running foot of dirt removed.

For second ten feet in depth, \$4 per running foot of dirt removed.

For third ten feet in depth, \$6 per running foot of dirt removed.

For fourth ten feet in depth, \$8 per running foot of dirt removed.

Below forty feet in depth, \$10 per running foot of dirt removed.

Tunnelling.

(a) In unfrozen ground, for first (25) twenty-five feet, \$2 per running foot. Beyond 25 feet, \$3 per running foot.

(b) In frozen ground, for first (25) twenty-five feet, \$3 per running foot. Beyond 25 feet, \$4 per running foot.

Drifting from Shaft.

(a) In unfrozen ground, \$2 per running foot.

(b) In frozen ground, \$3 per running foot.

There shall be allowed in addition, \$1 per running foot for every ten feet in depth of the shaft from which the drift is run.

Timbering.

In shaft, \$3 per running foot.

In drift or tunnel, \$2 per running foot.

Open-cutting.

(a) Ground sluicing, 25 cents per cubic yard of dirt removed.

(b) Stripping (by scraper) 50 cents per cubic yard of dirt removed.

(c) Hand shovelling, \$1.75 per cubic yard of dirt removed.

Drilling.

Two dollars per foot in depth in unfrozen ground.

Four dollars per foot in depth in frozen ground.

Hydraulicking, Dredging and Steam Shovelling.

Fifty cents per cubic yard.

Unprovided Cases.

Other miner-like work for which special provision is not made shall be allowed for at the rate of \$6.50 per day per man employed.



Second Ave., Dawson. Taken midnight July 10, 1904.

CHAPTER 5.

COMMERCIAL CONDITIONS.

Probably there is no other city on the continent of America where the commercial conditions are so peculiar as they are in Dawson. The limited period of transportation, the difficulty of accurately calculating on the importation of not more than a sufficient quantity of the different lines of goods, the risk to perishables, the delay occasioned by the congestion of traffic during the latter part of the summer, and high freight rates; all these considerations create an unusual velocity in the mind of the wholesale merchant.

Many of the necessities of life are canned goods which, together with staples and other merchandise, have to be imported between the middle of June and the latter part of October, this being the period when the Yukon river, which is the

great channel of transportation in the interior, is open to navigation. Some lines of merchandise are shipped from Whitehorse to Dawson over the winter trail, but the express and freight rates are so high that wholesale merchants and importers order for delivery during this season of the year only goods and commodities which they are confident will find a ready market. It is only by experience, by a thorough knowledge of the requirements of the community and by careful manipulation that large importers can attain any degree of success. Staple provisions and other commodities are ordered as late in the summer as possible, and the transportation companies have a busy time during the last three or four weeks of navigation. There are two reasons why orders are delayed until so late in the season. In the first place, importers desire to ascertain as nearly as possible the quantity of provisions available on the market, and in the second place they desire their last consignment for the season to be as fresh as possible. The experience of the past has been that when there is more than a sufficient supply of a certain line of goods, the wholesale merchant or importer will reduce the price in order to dispose of his stock before the opening of navigation, and as a result importers carrying lines of goods which have been reduced in price will probably compete by a further reduction, and the commodity may be sold at a considerable loss to the importer. If the supply of a certain commodity, which cannot be retained during the whole winter in a state of preservation, exceeds the demand, then the importer must necessarily sell at a sacrifice, because he will be confronted with the loss which naturally takes place among perishable goods. On the other hand the wholesale merchant or importer can increase the price as soon as he discovers that there is a likelihood of a deficiency in a certain line, as he feels confident that there is only a slight possibility of the market being replenished before the opening of navigation, and if it is replenished by goods brought over-

land then he can command the difference between the summer and winter rate.

During the past two years the population of Dawson and the surrounding district has considerably decreased, and in consequence several retail and wholesale merchants have closed out their business. The gradual reduction in population necessarily created a corresponding reduction in the number of stores and other business houses. The result of such a condition is the gradual cessation of business on the part of the merchant who only transacts a small volume of business, and the continuation in trade of the merchant who does a large amount of business, unless there is an amalgamation of interests. Business in Dawson at the present time may be said to have found its level. The distribution of the retail and wholesale trade seems to have reached that stage where the margin of profit on the volume of business transacted is a satisfactory return or interest on the capital invested.

In the early days of the camp the miners had to come to Dawson from the creeks in order to obtain their supplies, and such utensils and machinery as were required for the operation of their claims, but during the last three or four years stores have been established at different points on the creeks, and the miners do not now find it necessary to make the long and expensive trip to Dawson. Within the last year or so the business of the creek stores has been invaded by pedlars, who travel between Dawson and the different creeks and deliver all kinds of goods at cabins on the claims at a rate very little higher than retail prices in Dawson. By purchasing from the creek stores or from the pedlars at a slightly increased rate, the miners save the expense of a round trip to Dawson, as well as the time occupied by the trip.

Apart from the consideration of the question of supply and demand, the Dawson merchant has to encounter the risk of fire and storage rates. Notwithstanding the heavy expenditure

incurred by the different municipal councils in the establishment and maintenance of an efficient fire department, Dawson has been visited by disastrous conflagrations. When the thermometer is meandering anywhere from 20 to 70 below zero it is essential to tax the stoves at times to their utmost capacity in distributing heat, and during the winter season a disastrous fire may be caused by an overheated flue or some such other incident which would be quite unusual in a moderate clime. There is no city in the west where greater precaution is taken against fires than in Dawson. There is a law providing for the erection of proper safeties and other precautionary measures, and an officer is appointed to enforce the law. In the fall of 1906 a hydrant system was installed for the better fire protection of the city. Prior to this period, engines were located at different points along the water front, and when an alarm was turned in, lines of hose were immediately laid from the engines to the scene of the fire. Under the new system, however, hydrants are located along the principal streets, and as soon as an alarm is turned in eight streams of water, each of a pressure of over 100 pounds, can at once be thrown on a fire. The water is forced along wooden pipes by an engine, and during the winter the water is kept at a certain temperature to prevent it from freezing, and an electrical heating apparatus covers each hydrant. The fire insurance rates in Dawson vary from two to seven per cent, according to locality, but most of the merchants prefer to assume the risk themselves instead of paying what they consider an exorbitant rate. In some sections of the city insurance cannot be obtained.

The storage of goods during the winter is very costly. The rent of a warehouse will run from \$75 to \$120 a month; and to this amount has to be added fuel, which this year (1907) averaged \$15 per cord, and coal about \$18 per ton, and the wages of a warehouseman, \$150 per month. If a merchant neither owns nor rents a warehouse, he can place goods in

warm storage at the rate of \$2 per ton, and in cold storage at the rate of 75 cents per ton per month in each case.

The following is a list of retail prices of goods on the Dawson market, April 31, 1907:—

RETAIL PRICES.

Eggs, over-ice	\$0.75
Butter, per lb.....	0.50
10 lbs. for.....	4.50
Cheese	3—1.00
Sugar, 10 lbs. for.....	1.00
Cream, hotel size, 3 cans.....	1.25
Tobacco, Westover, per plug.....	0.75
T. & B., 3 plugs.....	1.25
Rye flour, 50 lbs.....	3.75
Whole wheat, 10 x 10.....	7.50
Rolled oats, 7-lb. sack.....	0.75
Corn meal, 10-lb. sack.....	0.75
Cream of Wheat, package.....	0.50
3 packages	1.00
Corn starch, 5 packages.....	1.00
Van Houton's cocoa, per lb.....	1.50
Maple syrup, Canadian, $\frac{1}{2}$ gal.....	1.00
Maple syrup, Log Cabin, $\frac{1}{2}$ gal.....	1.25
Molasses, $\frac{1}{2}$ gal.....	1.00
Rice, 8 lbs.....	1.00
Lima beans, 7 lbs.....	1.00
Potatoes, 7 lbs.....	1.00
Evaporated pears, lb.....	0.25
Evaporated apricots, lb.....	0.25
Canned fruits, Canadian, all sizes.....	0.25
Canned peas, beans or corn, can.....	0.25
Canned corn on cob, per can.....	1.00
Canned tomatoes, Canadian.....	0.25
Asparagus tips, 3 cans.....	1.25
B. P. Oysters, 2 s., per can.....	0.50
3 cans for.....	1.25
Canned chicken or turkey, 3 cans.....	1.25
Canned ox tongue, can.....	1.25
Lennox soap, 10 bars.....	1.00
Sunlight soap, 10 bars.....	1.00
Hams and bacon, per lb.....	35 to 40
Olive oil, per bottle, small.....	0.50
Medium	0.75
Large	1.25
L. & P. sauce.....	50c. and 1.00

MEAT AND GAME.

During the summer large consignments of sheep and cattle are shipped to Dawson from British Columbia and the Northwest. The animals are killed and the carcasses placed in cold storage. The last consignment of the season arrives about the middle of October, and the first consignment of the next year is brought to Dawson over the winter trail and arrives about the latter part of March. During the winter, however, hunters and Indians supply the market with game, such as moose, caribou and mountain sheep, which is hauled from the mountains to the city by dog-teams. The Peel River Indians usually arrive in Dawson about the latter part of December with several tons of moose and caribou; and a few weeks later hunters on the headwaters of the Klondike arrive in Dawson with the first consignment of their season's work. Game is the only kind of fresh meat available in many of the outlying districts, and hunters find a ready market among the miners on the creeks.

Ptarmigan are numerous on the headwaters of the Klondike, and there are also some grouse and wild duck.

The following are the retail prices of meat and game on the Dawson market:—

Beef (best roast).....	45c. per pound.
Steak (best)	50c. "
Mutton "	50c. "
Pork "	40c. "
Veal "	50c. "
Moose	30c. "
Caribou	30c. "
Ptarmigan	75c. each.
Wild duck	75c. "

FUR.

During the past few years a considerable fur trade has been carried on by trappers and Indians, who usually dispose of their stock either at Fort Selkirk or Dawson, or at some of the outlying trading posts. Some trappers, however, who have

large consignments of fur, prefer to ship either to San Francisco or London. The localities mostly frequented by trappers are the Pelly, the headwaters of the Klondike, the White river, the Stewart and the Fortymile. The best fur is obtained on the headwaters of the Pelly, where a few years ago marten were plentiful. During the winter of 1902-1903 two trappers caught 446 marten, and also a large number of otter, beaver and mink, which they sold at the trading post at Fort Selkirk. The marten averaged \$7 per skin. Unfortunately, however, marten, mink and otter are getting very scarce in this locality, while lynx, wolves and wolverine are numerous.

In the Pelly country there is a trading post at the mouth of Ross river, where fur can be sold by trappers and supplies can be obtained for prospecting. Unless a trapper has a large number of skins, it will not pay to make the trip either to Fort Selkirk or Dawson, as the extra price that could be obtained would not repay the expenses and time occupied by the trip. The steamer *Quick* makes an annual trip to Ross river, taking up supplies and returning with fur.

A much higher price can be obtained for wolves and wolverine in Dawson than can be obtained in the markets outside of the Territory. This class of fur is shipped from Dawson to St. Michaels and other points on the lower Yukon, where it is much in demand by Indians for trimming purposes. For one wolf or wolverine the Indians will give in exchange three white foxes or three marten. The value of wolves and wolverine is, therefore, determined in the Dawson market according to the demand by the Indians along the lower river.

The following prices are being paid for fur in Dawson this year (1907); and the prices at Fort Selkirk and Ross river are for the preceding year:—

	Dawson.	Fort Selkirk.	Ross River.
Lynx	\$4.50 to \$5.00	\$4.75	\$3.00 to \$4.00
Wolverine	6.00 to 7.50	6.00 to \$8.00	2.00 to 5.00
Wolves	6.00 to 10.00	5.00	3.00 to 4.00
Beaver	*3.50 to 4.00	6.00	4.00
Marten	7.50 to 40.00	10.00 to 13.00	3.50 to 6.00
Fox, red	3.00 to 4.00	5.00	4.00
Fox, cross	4.00 to 20.00	8.00	5.00 to 6.00
Fox, silver grey	75.00 to 500.00	125.00 to 150.00	60.00 to 75.00
Fox, black	100.00 to 750.00	250.00 to 350.00	
Mink	5.50 (prime)		
Ermine	0.35 to 0.75		

*In Dawson \$3.50 to \$4 per pound.

HARDWARE.

During the first few years of the camp a very large business was transacted by hardware merchants. Shelf hardware was much in demand, as were also the different utensils required for placer mining purposes. With the gradual decrease in population and the introduction of dredges and other large mining plants, the demand for hardware merchandise has decreased. The companies, who have acquired large areas of mining property and who are operating dredges and other large plants, import their mining machinery, fittings and other utensils.

The following are extracts of tariff items from Schedule A, Import Duties of Customs, as amended up to the 12th February, 1907, as affecting certain mining machinery which may be imported into the Yukon Territory:—

Tariff Item.

No. 460.—Sundry articles of metal as follows, when for use exclusively in mining or metallurgical operations, viz.: Diamond drills, not including the motive power; coal cutting machines, except percussion coal cutters; coal heading machines, coal augurs, rotary coal drills, core drills, miners' safety lamps and parts thereof, also accessories for cleaning, filling and testing such lamps; electric or magnetic machines

for separating or concentrating iron ores; blast furnaces for the smelting of copper and nickel; converting apparatus for metallurgical processes in metals; copper plates, plated or not; machinery for extraction of precious metals by the chlorination or cyanide processes; amalgam safes; automatic ore samplers; automatic feeders; retorts; mercury pumps; pyrometers; bullion furnaces; amalgam cleaners; blast furnace blowing engines; wrought-iron tubing butt or lap welded, threaded or coupled or not, over four inches in diameter; and integral parts of all machinery mentioned in this item.

British preferential tariff.. . . .	Free.
Intermediate tariff.	Free.
General tariff.. . . .	Free.

No. 461.—Machinery and appliances of iron or steel of a class or kind not made in Canada, and elevators and machinery of floating dredges, when for use exclusively in alluvial gold mining.

British preferential tariff.. . . .	Free.
Intermediate tariff.	Free.
General tariff.. . . .	Free.

461a.—Iron or steel pipe, not butt or lap welded, and wire-bound wooden pipe, not less than thirty inches internal diameter, when for use exclusively in alluvial gold mining.

British preferential tariff.	5 per cent.
Intermediate tariff...	7½ “
General tariff.. . . .	10 “

453. Telephone and telegraph instruments, electric and galvanic batteries, electric motors, dynamos, generators, sockets, insulators of all kinds; electric apparatus, n.o.p.; boilers, n.o.p.; and all machinery composed wholly or in part of steel, n.o.p.; and iron and steel castings, and iron or steel integral parts of all machinery specified in this item.

British preferential tariff.	15 per cent.
Intermediate tariff...	25 “
General tariff.. . . .	27½ “

454. Manufactures, articles or wares of iron or steel or of which iron and steel (or either) are the component materials of chief value n.o.p.

British preferential tariff.	20 per cent.
Intermediate tariff.	27½ “
General tariff.	30 “



A Whitehorse-Dawson winter stage.

CHAPTER 6.

TRANSPORTATION.

The Yukon river is navigable from Behring sea to Whitehorse, a distance of over 2,000 miles; and during the summer this river is the great channel of transportation from the coast to the interior. On the south side steamers ply along the Pacific coast between Vancouver, Victoria, Seattle and Skagway, connecting at the latter point with the White Pass Railroad, which extends from Skagway to Whitehorse. Between the middle of June and the latter part of October a fleet of steamers belonging to the British Yukon Navigation Company ply between Whitehorse and Dawson. The trip between Whitehorse and Dawson is made in less than two days, and

between Dawson and Whitehorse in about three and a half days. In past years large quantities of merchandise were shipped on scows from Whitehorse to Dawson and sold on the water front to merchants and citizens. The city council of Dawson, however, in 1903, imposed a license of \$500, which was subsequently reduced to \$300, on all transient traders. With the imposition of this tax, and a special through rate offered by the White Pass and Yukon Route and the British Yukon Navigation Company, to merchants shipping goods, the transient business practically ceased, and the transportation business between Whitehorse and Dawson is now almost entirely handled by the British Yukon Navigation Company. There is also one steamer belonging to an independent company, operating on this stretch of the river.

The ice on the Yukon breaks up about the middle of May, and shortly after that time the river is navigable north of Lake Laberge, the ice in the lake remaining solid until about the middle of June. During this period lines of goods which may be in urgent demand are carried around the lake and shipped to Dawson on scows and whatever boats may be available.

The following are the official figures as to the opening and closing of the Yukon since any records have been kept:—

Freeze-up.		Year.	Break-up.	
.....		1896	May 19,	2.35 p.m.
Nov. 4		1897	" 17,	4.30 p.m.
Oct. 23		1898	" 8,	8.15 a.m.
Nov. 2		1899	" 17,	4.10 p.m.
" 12, 5.00 a.m.		1900	" 8,	6.00 a.m.
" 5, 11.40 a.m.		1901	" 14,	4.13 p.m.
" 10, 1.15 a.m.		1902	" 11,	8.45 p.m.
" 8, 1.45 a.m.		1903	" 13,	11.38 a.m.
" 10, 8.50 a.m.		1904	" 7,	9.44 a.m.
" 7, 12.50 p.m.		1905	" 10,	5.21 p.m.
" 5, 5.15 a.m.		1906	" 11,	7.45 a.m.
.....		1907	" 5,	5.52 p.m.

In 1904 there was issued by the White Pass and Yukon Route, in connection with the ocean lines between Puget Sound and British Columbia ports and Dawson, a pamphlet known as 'Northern Freight Classification No. 4,' showing in alphabetical order a list of articles with the name of the class in which the rate is quoted on the annual tariff issued by the company. Occasionally as the annual tariff is issued, supplements have also been issued amending the classification list. In this classification list are also special rules and conditions governing the transportation of the different articles.

The following is an extract from the tariff for 1907, issued by the White Pass and Yukon Route:—

Governed by Northern Freight Classification No. 4, amendments thereto, or subsequent issues thereof.

Rates in dollars and cents per ton of 2,000 pounds.

Between British Columbia and Puget Sound Ports and Dawson.

CLASS RATES (See Rule No. 20.)

Item No.	NOTE.—C.L. means carload of 20,000 pounds or over, unless a lower minimum is provided. L.C.L. means less than carload.	White Pass and Yukon Route Points.	
		Quantity.	Dawson, Y.T.
	<i>Minimum Charge.</i>		\$3 75
1	Class A	L.C.L.	\$65 00
		C.L.	60 00
2	" B	L.C.L.	80 00
		C.L.	70 00
3	" C	L.C.L.	95 00
		C.L.	85 00

SPECIAL (Group) COMMODITY RATES.

4	Group 1—See Rule No. 14	C.L.	\$55 00	} Effective July 1st to Aug. 15th inclusive.
5	" 2 " 14	"	62 50	
6	" 3 " 15	"	55 00	
7	" 4 " 15	"	52 00	

See Clauses numbered 9, 10, 11 and 12 for Group Articles.

SPECIAL (Straight Carload) COMMODITY RATES.

8	Hay (compressed to at least 22 lbs. per cubic foot), Min. C.L. 14,000 pounds.....	C.L.	\$55 00	} Effective June 16th to July 31st inclusive.
9	Oats and feed—Straight or mixed carloads.....	"	50 00	
10	Blacksmith's coal	C.L.	\$45 00	} Effective June 16th to Aug. 15th inclusive.
11	Candles.....	"	52 00	
12	Nails, horse shoes, bolts, nuts and spikes (straight or mixed carloads).....	"	50 00	
13	Flour.....	"	50 00	
14	Sugar.....	"	50 00	
15	Canned cream or milk, hermetically sealed (straight or mixed).....	"	50 00	
16	Coal oil.....	"	55 00	
17	Beer.....	"	65 00	
18	Beer kegs, empty returned (any quantity), south bound only....	"	15 00	
19	Oats and feed (straight or mixed carloads).....	C.L.	\$55 00	Effective April 16th to June 14th inclusive; and from August 1st to Sept. 15th, after which dates the rates will be increased 10 per cent.

SPECIAL LUMBER RATES, EFFECTIVE SAME AS CLASS RATES (See Rule No. 20).

20	*Lumber, rough or dressed one side only	C.L.	\$30 00
21	Lumber, dressed or T. & G. securely fastened in bundles.....	"	42 50
22	Lath and shingles	"	35 00

NOTE.—Through rates on lumber named herein apply to Dawson only. Mixed carloads of lumber may be taken at the carload rate for each kind.

* PENALTIES.—When timbers or single pieces of lumber are—

Over 30 feet and not more than 40 feet long increase the rate 20 per cent.

Over 40 feet and not more than 60 feet long increase the rate 50 per cent.

Over 60 feet and not more than 80 feet long increase the rate 100 per cent.

RATES IN DOLLARS AND CENTS PER TON OF 2,000 LBS.

Rates named in this tariff do not include custom house charges or dues.

Subject to change without notice.

In view of the large number of dredges and hydraulic plants being imported into the Yukon Territory, the following extracts from the supplement (1907) to the Northern Freight Classification will be of interest to those contemplating the importation of such machinery.

When not otherwise specified in the Northern Freight Classification, an additional charge is made for handling heavy packages, including boilers and mining machinery, as follows:

Over 4,000 lbs. and not more than 6,000 lbs., add 10% to rate.
 Over 6,000 lbs. and not more than 8,000 lbs., add 15% to rate.
 Over 8,000 lbs. and not more than 10,000 lbs., add 20% to rate.
 Over 10,000 lbs. and not more than 12,000 lbs., add 25% to rate.
 Over 12,000 lbs. and not more than 14,000 lbs., add 30% to rate.
 Over 14,000 lbs. and not more than 16,000 lbs., add 35% to rate.
 Over 16,000 lbs. and not more than 18,000 lbs., add 40% to rate.
 Over 18,000 lbs. and not more than 20,000 lbs., add 45% to rate.
 Over 20,000 lbs., special contract.

HYDRAULIC PIPE.

Steel, wood or iron, when nested so that measurement will not exceed 60 cubic feet per ton of 2,000 pounds.....Class A
 When measurement exceeds 60 cubic feet per ton of 2,000 pounds, an additional charge will be assessed for such excess measurement as follows, cubic measurement to be determined by multiplying the square of the outside diameter by the length:

EXCESS MEASUREMENT.

Over 60 to 70 cubic feet per ton of 2,000 lbs., add to rate 2½%.
 Over 70 to 80 cubic feet per ton of 2,000 lbs., add to rate 5%.
 Over 80 to 90 cubic feet per ton of 2,000 lbs., add to rate 10%.
 Over 90 to 100 cubic feet per ton of 2,000 lbs., add to rate 15%.
 Over 100 to 115 cubic feet per ton of 2,000 lbs., add to rate 20%.
 Over 115 to 130 cubic feet per ton of 2,000 lbs., add to rate 25%.
 Over 130 to 145 cubic feet per ton of 2,000 lbs., add to rate 30%.
 Over 145 to 160 cubic feet per ton of 2,000 lbs., add to rate 35%.
 Over 160 to 175 cubic feet per ton of 2,000 lbs., add to rate 40%.
 Over 175 to 200 cubic feet per ton of 2,000 lbs., add to rate 50%.
 Over 200 to 225 cubic feet per ton of 2,000 lbs., add to rate 60%.
 Over 225 to 260 cubic feet per ton of 2,000 lbs., add to rate 70%.

San Francisco Rates.

The rates to and from San Francisco will be made by adding to the rates to and from Seattle, the following arbitraries applying only via Alaska Pacific Steamship Company in connection with the Alaska Steamship Company.

Minimum charge, 50 cents for any single shipment.

Class A—\$3.50 per ton of 2,000 lbs.
 Class B— 4.50 “ “ “
 Class C— 5.50 “ “ “

Hydraulic pipe and smoke stacks (exceptions to classification), \$6 per ton of 2,000 pounds, but not less than \$2 per 40 cubic feet.

On pieces or packages weighing over 4,000 pounds each, the following charge will be made in addition to the rates shown above:—

4,000 to 6,000 lbs.,	\$2.00	per ton of 2,000 lbs.
6,000 to 8,000 lbs.,	3.00	" " "
8,000 to 10,000 lbs.,	4.00	" " "
10,000 to 12,000 lbs.,	5.00	" " "
12,000 to 14,000 lbs.,	6.00	" " "
14,000 to 16,000 lbs.,	7.00	" " "
16,000 to 18,000 lbs.,	8.00	" " "
18,000 to 20,000 lbs.,	9.00	" " "

Joint freight tariff, naming through class rates between Vancouver, Victoria, British Columbia; Seattle, Tacoma, Port Townsend, Washington; and Whitehorse, Yukon Territory, via the Alaska Steamship Company, Pacific Coast Steamship Company, Canadian Pacific Railway Company (British Columbia Coast Service), and MacKenzie Brothers, Limited, Steamship Company—the White Pass and Yukon Route:—

NOTE.—C. L. means carload of 20,000 pounds or over, unless a lower minimum is provided.

L.C.L. means less than carload.

Whitehorse.

<i>Minimum Charge.</i>		(<i>\$2 75</i>)
	L.C.L.	C.L.
Class A.....	\$60 00	\$55 00
" B.....	68 00	61 50
" C.....	85 00	74 00

ST. MICHAELS TO DAWSON.

The stretch of river between Dawson and St. Michaels (a distance of 1,601 miles) is generally known as the Lower river; and on this route the steamers of the Northern Commercial Company and the North American Transportation and

Trading Company operate, connecting with ocean steamers at St. Michaels from Seattle and San Francisco. Nearly all the merchandise imported by these two companies is brought into the interior by this route, and delivered at their different trading posts along the river. Owing to the distance and the shortness of the season of navigation, the lower river steamers cannot make more than three trips during the summer, and each trip they not only carry a full cargo, but also push one or two heavily laden barges. The larger boats carry upwards of 600 tons, and each barge from 200 to 400 tons.

The trip between the mouth of the Yukon and Dawson in the early part of the season occupies about sixteen days on account of the strength of the current created by the volume of water in the river. In September, however, when the current is not so strong, the journey can be made in about fourteen days. The trip from Dawson to St. Michaels is made in slightly less than six days. On what is known as the Yukon flats the river opens out and attains a breadth of about sixty miles. There are numerous channels on this stretch of the river, which is tortuous and difficult to navigate, and the Northern Commercial Company employ the services of a pilot, who takes charge of all the company's boats when crossing the flats.

The passenger rate between Dawson and Seattle or San Francisco via St. Michaels is \$125 first-class. On the same route the steerage rate is \$105, being first-class on the river and steerage on the ocean. During the summer the companies operating steamers on the lower river transact a considerable amount of passenger business, and a large number of miners, merchants and others travelling to and from the different points in Alaska usually travel by way of Whitehorse and Dawson. Tickets can be obtained at most of the companies' offices in Alaska direct from those points to ports in British

Columbia and Puget Sound, and baggage can be checked and forwarded in bond.

WINTER.

In the early days the only route to and from Dawson during the winter season was the frozen surface of the Yukon river. For about one month while the ice was forming on the river, and for a similar period in the spring while the ice was breaking up, there was no communication between Dawson and the outside. It was dangerous and almost impossible to travel any distance on the shore ice. No mail could be carried either way for about two months each year.

In the summer of 1902 the Government built a winter trail between Dawson and Whitehorse, a distance of 333 miles, at a cost of \$129,000, and since that time about \$50,000 have been expended in maintaining and repairing this road. During the winter season and since the construction of the new trail, the White Pass and Yukon Route run a tri-weekly stage service between Whitehorse and Dawson. From the close of navigation until sufficient snow has fallen to make good sleighing the company uses Concord coaches, which can carry twelve passengers each. Until the crossings are frozen over, passengers and baggage are taken across the rivers in canoes, which are handled by expert boatmen. As soon as there is sufficient snow for sleighing, sleighs are substituted for coaches. Each sleigh is drawn by four horses, and has accommodation for from nine to fourteen passengers, 1,000 pounds of passenger baggage and 1,000 pounds of mail and express. No team travels more than an average of twenty miles, and fresh horses are in readiness at each station along the route. From about the first of March the passenger traffic to the interior becomes very heavy, and from that date until about the seventh of April there is an almost daily service of stages.



On the Yukon's Wintry Wind-swept Waste.

The following is an extract of the passenger rates charged by the White Pass and Yukon Route, as published in Bulletin No. 19 issued by the company during the winter of 1906-07:—

NORTH BOUND.

Whitehorse to Dawson.

From the close of navigation to December 1.....	\$100
From December 1 to March 15, inclusive.....	80
From March 16 to April 15, inclusive.....	100
From April 16 to end of season.....	125

SOUTH BOUND.

Dawson to Whitehorse.

From the close of navigation to December 1.....	100
From December 1 to March 31, inclusive.....	75
From April 1 to April 15, inclusive.....	100
From April 16 to end of season.....	125

Skagway to Whitehorse.

White Pass Railroad.....	\$ 20
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The above rates do not include meals and lodging at the different roadhouses along the trail. The regular roadhouse charges are: Meals, \$1.50 each; beds, \$1, and small rooms from \$2 up.

Freight, express and baggage can be bonded through to Dawson during the winter on any of the stages operated by the White Pass and Yukon Route. Baggage exceeding 25 pounds in weight is charged for, north of Whitehorse, at the rate of 25 cents per pound by passenger stage, and 20 cents per pound by freight stage.

The White Pass and Yukon Route also carry freight over the winter trail on sleds specially constructed for this purpose, and the journey is made in about eight days. The rates between Whitehorse and Dawson are from 20 to 30 cents per pound according to the class of goods as defined in the company's Northern Freight Classification No. 4 and amendments.

KLONDIKE MINES RAILWAY.

The Klondike Mines Railway has been in operation since the summer of 1906. This road extends from Dawson along

the Klondike valley and up Bonanza creek to Grand Forks, at the junction of Eldorado, and then to the Dome, a distance of thirty-two miles. From the Dome passengers and freight are conveyed to the different mining creeks, which branch from this point, by stages and freight teams. Prior to the construction of the railroad a line of stages carrying freight and passengers operated between Dawson and Grand Forks, a distance of twelve miles. When the railroad opened, however, these stages ceased running, and the transportation business along this route is now being handled by the railway company.

The following are extracts from the standard freight and passenger tariffs of the Klondike Mines Railway Company:—

PASSENGER TARIFF, effective December 17, 1906.

Distances.	Rates.
Not over 5 miles.....	20 cents per mile; minimum charge 50 cents.
Over 5 and not over 10 miles.....	17½ "
Over 10 and not over 20 miles.....	16 "
Over 20 and not over 30 miles.....	15 "

FREIGHT MILEAGE TARIFF, governed by Canadian Freight Classification.

MILEAGE.	RATES IN CENTS PER 100 POUNDS.									
	Classes.									
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Not exceeding 5 miles.....	30	26	24	22	20	20	15	15	15	12
Over 5 miles and not exceeding 10..	40	36	32	29	26	26	20	22	23	18
Over 10 miles and not exceeding 15..	50	44	40	36	33	33	26	28	30	24
Over 15 miles and not exceeding 20..	60	54	48	44	40	40	32	34	36	30
Over 20 miles and not exceeding 25..	70	64	58	52	46	46	38	40	40	36
Over 25 miles and not exceeding 30..	80	74	67	60	53	53	44	46	45	42
Over 30 miles and not exceeding 35..	90	84	76	68	60	60	50	52	50	48

Minimum charge for not over 15 miles, \$1. For over 15, but not over 35 miles, \$1.50.



No. 233. — Below Lower Discovery, Dominion Creek. 'Shovelling-in.'

ROAD CONSTRUCTION AND FREIGHTING.

Probably one of the most important features in the opening up of the Klondike district and other gold mining areas within the Yukon Territory is the system of road construction, which has done so much to stimulate and develop the mineral resources of the Territory, and thereby contributed in no small degree to the gold production of the world.

The construction of a system of roads in the Yukon Territory was a colossal undertaking. When it is remembered that in 1899 and 1900 miners were receiving as high as \$1⁰⁰ an hour, it is possible to form some idea of the expenditure to be encountered. In 1899 workmen on the road were paid at the rate of 85 cents per hour; in 1900 they received 80 cents, and since 1901 they have been paid at the rate of 75 cents an hour. In 1899 a team could not be hired for less than \$25 a day. In the following year this was reduced to \$20, which is the rate paid at the present day.

The first road in the territory was built in 1899, along the top of the ridge between Bonanza and Hunker creek, this road being subsequently extended to Gold Run. The same year branches were constructed from this road to Bonanza, Gold Bottom and Caribou. In 1900 the present road from Dawson to Grand Forks was constructed, and in the following year this road was continued up Bonanza, connecting with the summit road which had been built the previous year. In 1901 the present wagon road was also built from the Ogilvie bridge along the Klondike valley and Hunker creek to Caribou, a distance of thirty-three miles.

In 1901 a pack trail was built from Dawson to Glacier creek, and in the following year this trail was improved and made a passable wagon road. The mining industry in the Miller and Glacier district continued with increased activity, and in 1904 warranted the expenditure of a sufficient amount

to construct a good wagon road. This road commences on the opposite side of the Yukon from Dawson, but a cable ferry and scow, which were purchased by the local government, conveys horses, machinery and supplies, &c., across the river. In summer all the freight and passenger traffic from Dawson to Miller and Glacier creek is carried over this road, a distance of 73 miles. The winter trail from Dawson to Miller is by way of the Yukon river to Fortymile, up Fortymile to Brown creek, up Brown creek to its head, then over the summit to Big Gold and Glacier, a distance of 110 miles.

In winter the trail from Duncan to Dawson is by way of Hunker, Dominion, Jensen, Gravel lake, Barlow, and across country in a straight line to Mayo, a distance of 150 miles. (See trail marked on map.) In summer there is steamboat communication between Dawson and Mayo, the Stewart river being navigable to Fraser falls.

The following statement shows the number of miles of sled and wagon roads constructed since 1899, namely:—

WAGON ROADS.

1899.	1900.	1901.	1902.	1903.	1904.	1905.	Total.
45·00	32·00	63·36	85·81	26·00	141·00	37·00	430·17

SLEIGH ROADS.

160·00	10·00	80·25	372·00	4·00	29·00	13·00	668·25
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The cost of the construction of wagon roads runs from \$1,500 to \$3,300 per mile, and sled or winter trails from \$250 to \$350 per mile.

The following comparative statement of freight rates between Dawson and the principal mining districts during the

summer months will show the enormous advantage derived by the miners from the construction of the system of roads throughout the Territory:—

Destination.	Distance from Dawson.	Rate per 100 Pounds.	
		1899.	1903.
	Miles.	\$ cts.	\$ cts.
Grand Forks	12	7 00	1 00
Gold Bottom	20	8 00	1 50
Caribou	33	12 50	2 00
Sulphur (Discovery).....	35	12 50	2 00
Gold Run	55	18 00	3 00
Glacier.....	73	20 00	6 00
Duncan—Present rate from Dawson to Mayo by steamer, \$2 per 100 pounds; from Mayo to Duncan by trail, \$6 per 100 pounds.			

In order to illustrate the saving to the mining operator by the system of roads which have been constructed in the Klondike district alone, the following is a statement of the total tonnage of freight, including supplies and mining machinery, delivered by freighters on the principal creeks in the district during the year 1903, as compared with what the cost would have been in 1899, namely:—

District.	Tons.	1899.		1903.		Net gain to Operator.
		Rate.	Amount.	Rate.	Amount.	
		\$	\$	\$	\$	\$
Bonanza.....	4,500	140	630,000	20	90,000	540,000
Hunker.....	3,750	160	600,000	30	112,500	487,500
Dominion.....	3,000	250	750,000	40	120,000	630,000
Gold Run.....	2,250	360	810,000	60	135,000	675,000
Sulphur	1,500	250	375,000	40	60,000	315,000
	15,000		3,165,000		517,500	2,647,500

The above table shows the freight delivered only to the principal producing creeks. It is estimated that the freight delivered on the smaller producing creeks would amount to 5,000 tons, which would thus increase the aggregate to at least 20,000 tons.

The above statistics respecting the construction of roads, &c., were compiled by the Inspector of Works and Buildings for the Yukon Territory.



Yukon Hunters and their Game (Caribou).

CHAPTER 7.

GENERAL INFORMATION.

CLIMATE.

It is very doubtful whether people who have never lived in the Yukon can appreciate to any accurate extent the climatic conditions which exist in this Territory during the winter and summer seasons. Some are under the impression that the winter is extremely rigorous, and that the few hours of light during the day render this season of the year anything but delightful. It is quite true that at times the cold is intense, but at the same time an exceedingly low temperature does not continue for a long period at a time. The weather

may be extremely cold for a week or occasionally two weeks, and then there is usually a milder period, when the thermometer registers not more than 20 or 25 below zero. A temperature of from 15 to 25 below zero, with a few hours of sunlight, may be characterized as ideal Yukon winter weather. The snow is fine and powdery, the air is dry and crisp and the sky is clear. What may be termed the most depressing period of the year is between the middle of December and end of the first week in January. During this period the sun occasionally shines on the surrounding hills, unless there is severe cold, in which case the sun may not be seen for several weeks. By the middle of February, however, there are usually a few hours of sunlight. The trails leading from Dawson to the different creeks are comparatively level, and by the middle of January are in splendid condition for sleighing. Wrapped in costly furs and seated behind spanking teams, many of the citizens of Dawson avail themselves of this exhilarating form of enjoyment.

It has been well said that the climate of a country is the sum and average of the weather. If this be so, then a glance at the accompanying chart will convince the most sceptical that a Yukon winter has its periods of moderation as well as its periods of extreme cold, and that there may not be such an unfavourable comparison with the climate experienced on the western plains. (See opposite page 137).

A very low temperature is usually accompanied by a thick fog, which hangs over the Yukon valley to a depth of four or five hundred feet. While Dawson is enveloped in this grey shroud the atmosphere surrounding the tops of the mountains is quite clear, and at an elevation of 800 or 1,000 feet the temperature is from 8 to 12 degrees warmer than in the valley.

Dawson is well protected from winds by the surrounding mountains, but as there is a marked absence of winds throughout the district, this condition may be due to the fact that this

part of the Territory is situated on the extreme north of the Temperate Zone, and therefore outside the range of the anti-cyclonic area of the interior. Occasionally during the winter the Chinook winds sweep across the Yukon valley; which would seem to indicate the passage of a storm centre to the eastward, if we accept the theory that the cause of these winds is similar to that of the foehn experienced in Switzerland.

One of the greatest ranges of temperature within such a short period that has been experienced in the Territory, or that has been shown by the official records, occurred in February, 1907. On the 14th the temperature was 1 below zero, on the 15th it was 45 above, and on the 18th it was 45 below, a difference of 90 degrees within three days.

As is common in all northern latitudes, the display of the Aurora Borealis is, at times during the winter nights, magnificent. For a moment a flickering light may be seen at some distant point in the sky, then with the speed of a javelin flying from the hand of Achilles, there flashes across the sky a streak of light, the end of which is lost on the opposite horizon. There is an apparent twitching of the phenomenon, and in a few seconds waves of light radiate in all directions. Vivid flashes overspread the sky, as if 'ethereal radiance' were escaping from Prometheus' reed. The sky is lit up with the lurid glare of this remarkable phenomenon, which writhes and twists in all conceivable forms; at times presenting huge parallel arches, then suddenly changing into the most irregular and fantastic shapes.

The following is an extract of a report on the climate of Dawson, by Mr. R. F. Stupart:—

'Spring may be said to open towards the end of April, the last zero temperature of the winter usually occurring about the fifth of this month. May, with an average temperature of 44 degrees, is by no means an unpleasant month, and the twenty-third is the average date of the last frost of spring. Daily observations during five summers indicate that on the

average the temperature rises to 70 degrees or higher on 46 days, and to 80 degrees or higher on 14 days; 90 degrees was recorded in Dawson in June, 1899, and 95 degrees in July of the same year. These temperatures with much bright sunshine and an absence of frost during three months, together with the long days of a latitude within a few degrees of the Arctic circle, amply account for the success so far achieved by market gardeners near Dawson in growing a large variety of garden produce, including lettuce, radish, cabbage, cauliflower and potatoes, and warrant the belief that the hardier cereals might possibly be a successful crop both in parts of the Yukon Territory and in the far northern districts of the Mackenzie river basin. August 23rd would appear to be the average date of the first autumnal frost, the temperature rapidly declining during the close of this month. Although night frosts are not infrequent in September, the month as a whole is mild, with a mean temperature of 42 degrees. October may be fairly termed a winter month, the mean temperature being but 22 degrees, and the first zero of winter recorded on the average about the 18th.'

Professor John Macoun, in a report on the climate and flora of the Yukon Territory, described the effect of the Coast range of mountains on the climate, as follows:—

'Instead of the Coast range being an injury to the interior, it makes the climate pleasant both in summer and winter. The Yukon district has two climates, a wet and cold one on the coast, which may be called the Alaskan climate, as nearly all the coast region belongs to the United States. The climate of the Yukon district in Canada is just the reverse, being dry and warm in summer and cold in winter, with a light snowfall. Owing to the moisture rising from the warm Japanese current being carried inland by the upper southwest air current and striking the Coast range, this moisture is at once precipitated on the sea face of these mountains in the form of rain or snow, and the air freed from its moisture descends on the Yukon plain as dry air and having an increased temperature. It follows that the rainfall must be light in summer and also the snowfall in winter.'



Tunnel on White Pass and Yukon Railroad between Skagway, Alaska, and Whitehorse, Yukon Territory.

The following table shows the length of days at certain periods of the year between December 21 and June 21, namely:—

	Hours.	Minutes.
December 21.....	3	25
January 1.....	3	52
“ 15.....	4	57
“ 31.....	6	45
February 15.....	8	18
March 1.....	9	5
“ 21.....	12	6
April 11.....	14	38
“ 25.....	15	42
May 11.....	17	15
June 21.....	24	

SPORT AND SCENERY.

To the tourist in search of an ideal trip, to the sportsman in search of adventure and abundance of large game, to the geologist or scientist desiring to study the enormous upheavals of the earth's crust and subsequent transformations which have taken place in this northern country, to those who desire to come into close touch with pioneer life and view some of the most wild and rugged scenery in the world with the full comforts afforded by modern transportation facilities, to the mineralogist and capitalist who desire to see the most modern mining machinery extracting gold from the earth under conditions such as exist nowhere else in the world and who may desire to find a field for profitable investment, it is doubtful if there is a part of any country in the world affording such a wide field for exploitation and investment as can be found in the Yukon Territory. Under the heading of transportation, we have shown what can be constituted a great circular route from Pacific coast ports through the Yukon Territory and Alaska. A beautiful inland voyage, a trip of 2,000 miles down the Yukon on palatial river steamers, every part of the route marked by some landmark of the adventurous explorers of the early days or relics of the thrilling escapades during the

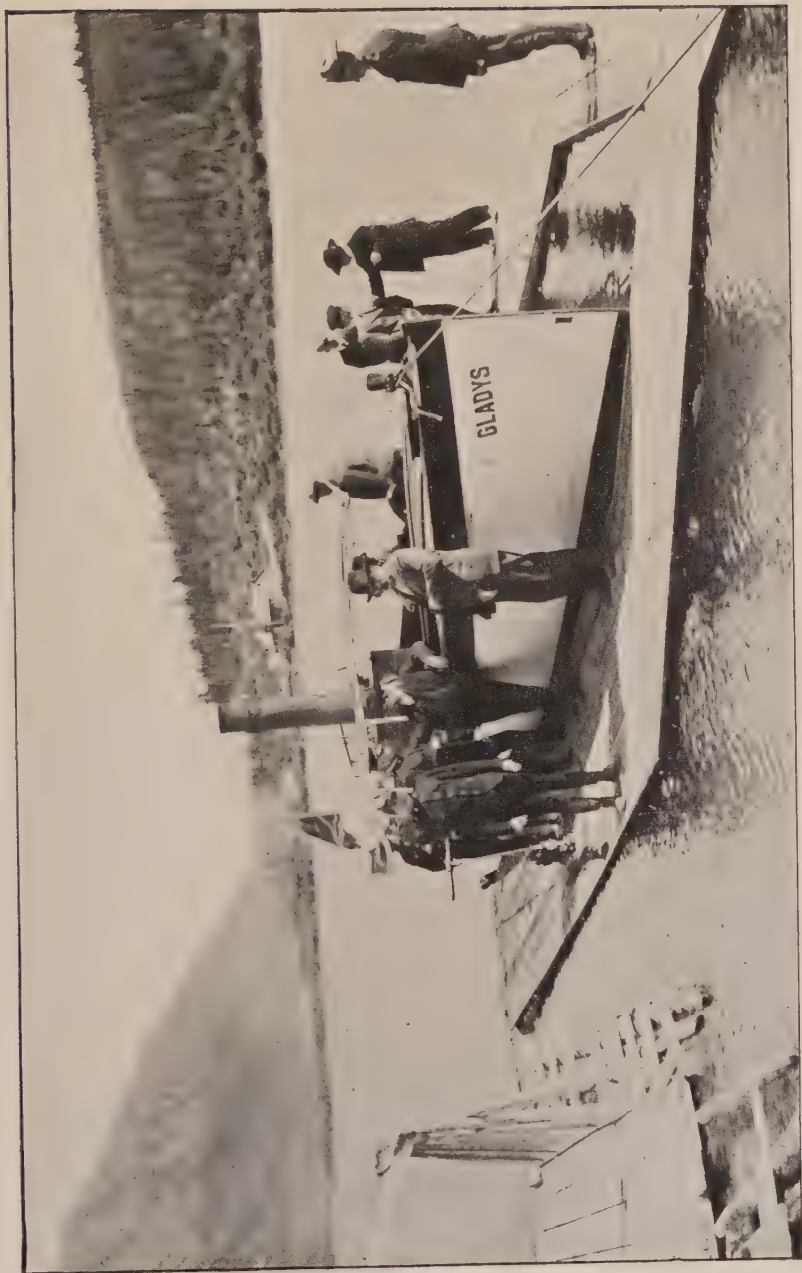
great rush of 1897 and 1898; and, if desired, an ocean trip between St. Michaels and Seattle or San Francisco.

We will now endeavour to give the tourist an idea of this scenic route, and the hunter a few facts concerning the abundance of game to be found in the Yukon.

VICTORIA OR VANCOUVER TO SKAGWAY.

Sailing from Victoria, Vancouver or Seattle, and seated on the deck of one of the luxuriously fitted steamers plying along the Pacific coast from these ports to Skagway, passengers and tourists enjoy what 'Official Bulletin No. 10' published by the Provincial Government of British Columbia, designates as 'the trip par excellence of the American continent.' We have not the slightest hesitation, however, in assuring the prospective tourist that the trip along the coast of British Columbia, when extended to the Yukon, is the trip par excellence of the American or any other continent. Travellers who have visited all parts of the world and have admired scenery rendered immortal by poetic genius, have freely admitted that the scenery along this unparalleled inland voyage not only equals but excels even the beautiful fjords of Norway and the wondrous beauties of the 'Isles of Greece.' The official bulletin we have just mentioned, in describing the trip along the coast of British Columbia, says:—

'Free from the cares and conventionalities of every-day life, and breathing the very air of heaven itself, you burst, like the ancient mariner, into an unknown sea filled with untold beauties, and sail over a bosom of waters unruffled as glass; among myriads of islands; through deep, rugged, rock-walled channels; past ancient Indian villages, mediæval glaciers, dark, solemn, pine-clothed shores, snow-capped peaks, dashing cataracts, yawning mountain gorges, spouting monsters and sea-whelps—away to the north a thousand miles almost, to mix with the icebergs that once floated under the sovereignty of the Czar of the Russias, but now drop peacefully from ancient glaciers over which the American eagle holds watchful guard—a continuous panorama in which the



Commissioner W. W. B. McInnes and Party at Carcross.

purest, the rarest, the wildest, the most beautiful and the grandest forms of nature are revealed.'

On the flats of Dyea and at Skagway, which is reached in three or four days, the multitude of gold-seekers landed during the great rush. Where shiploads of supplies were piled up in almost inextricable confusion there is now a well laid out city and commodious wharfs. When the trains arrive from the north or the steamers from the south, hotel porters jostle each other in their noisy attempt to attract passengers. Busses are in readiness, and passengers are rapidly driven to some of the well-equipped hotels in the city.

SKAGWAY TO WHITEHORSE.

The passenger train leaves Skagway at 9.30 a.m., and arrives at Whitehorse at 4.30 p.m. The journey across the White pass is one of unique scenic grandeur. Quickly passing from the railway yards at Skagway, the railroad follows the Skagway river, passing through the canyon, and then commences the ascent across the famous White pass, which was named by Mr. Ogilvie in honour of the Honourable Thomas White, who was Minister of the Interior of Canada between 1885 and 1888, and who authorized the expeditions to the Yukon district in charge of Dr. Dawson and Mr. Ogilvie. Some remarkable engineering feats were accomplished in the construction of this road through the White pass. The distance from the bottom of the pass to the summit is 21 miles, and the altitude is 2,952 feet. Clinging to the rocks the railway winds its way up the precipitous mountain sides; on one side a sheer wall of rock, on the other a yawning chasm through which rushes a mountain torrent. Across a high cantilever bridge, which was substituted for a switchback, and through several tunnels in this mountain fastness, the timber line is passed and the summit is reached. At several points on the road a splendid view is obtained of the Skagway valley,

and on either side of the pass are serried and jagged rocky peaks, which stand out in bold defiance like the battlements of some ancient fortress. From the summit there is a gradual descent to the north and the scenery changes. Professor John Macoun, describing this part of the route, says:—

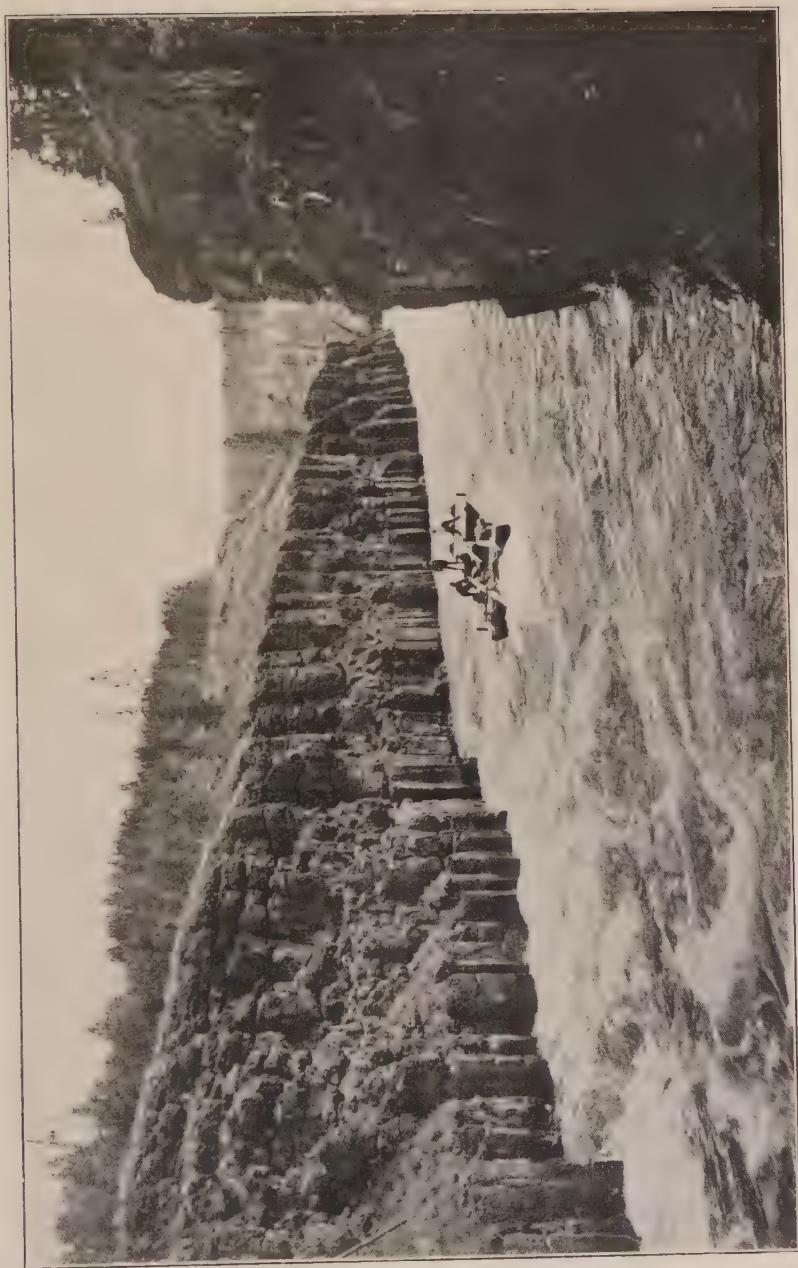
‘Here we were above the tree line, and bare mountain slopes, broken rocks, pools of water and a truly Arctic or high mountain vegetation showed the climate to be cold, while the stunted or broken trees lower down indicated the immense snowfall, which is characteristic of the whole coast region.

‘As we descended towards Lake Bennett the vegetation rapidly changed, and stunted firs gave place to small spruce and the high mountain shrubs and herbaceous plants began to be replaced by forest species. . . .

‘At Caribou crossing, twenty-four miles from Bennett, without descending one foot, the whole vegetation had changed and everything indicated a genial climate.’

Describing the tract of country between Log Cabin and Bennett, a writer in 1899, says: ‘Here the valleys narrow and here they widen out. We begin to find the bogs, which in the fall of ’97 destroyed 1,700 horses engaged in packing to the lakes. Though years have passed since then, the winding trail is passed every now and again, and it has the appearance of having been used yesterday. Sticking out of the bottomless mud we see forelegs and hindlegs, with occasionally the still bloated body of some poor beast who died in the service of man over a route which it was contended would never be crossed in any other way—a time when any talk of a proposed railroad was scoffed at and regarded as a good trail joke.’

The railway follows the east side of Lake Bennett to Carcross, at the foot of the lake. From this point steamers run to Conrad, on Windy Arm, where there are valuable quartz mines from which large quantities of ore have already been shipped. There is very little change in the character of the country between Caribou crossing and Whitehorse.



Shooting Miles Cañon.

Whitehorse is situated on the left bank of the Lewes river, at an elevation of 2,090 feet, and is the terminus of the White Pass and Yukon Railway. It is also the head of navigation on the Yukon river, and the terminus of the winter stage route from Dawson. During the spring of 1905 the greater part of the town was destroyed by fire. The principal public buildings are the post office building, in which are situated the offices of the Mining Recorder and Crown Timber and Land Agent, the customs office and telegraph office, erected at a cost of \$35,000, and a public school at a cost in the neighbourhood of \$7,000. Whitehorse is also the distributing point to the Kluane gold-fields, and several valuable copper properties. Miles canyon and Whitehorse rapids are only a short distance from Whitehorse, and are the scenes of many a wreck in the early days. Many lives were lost in shooting this turbulent portion of the Lewes, which is well worth a visit.

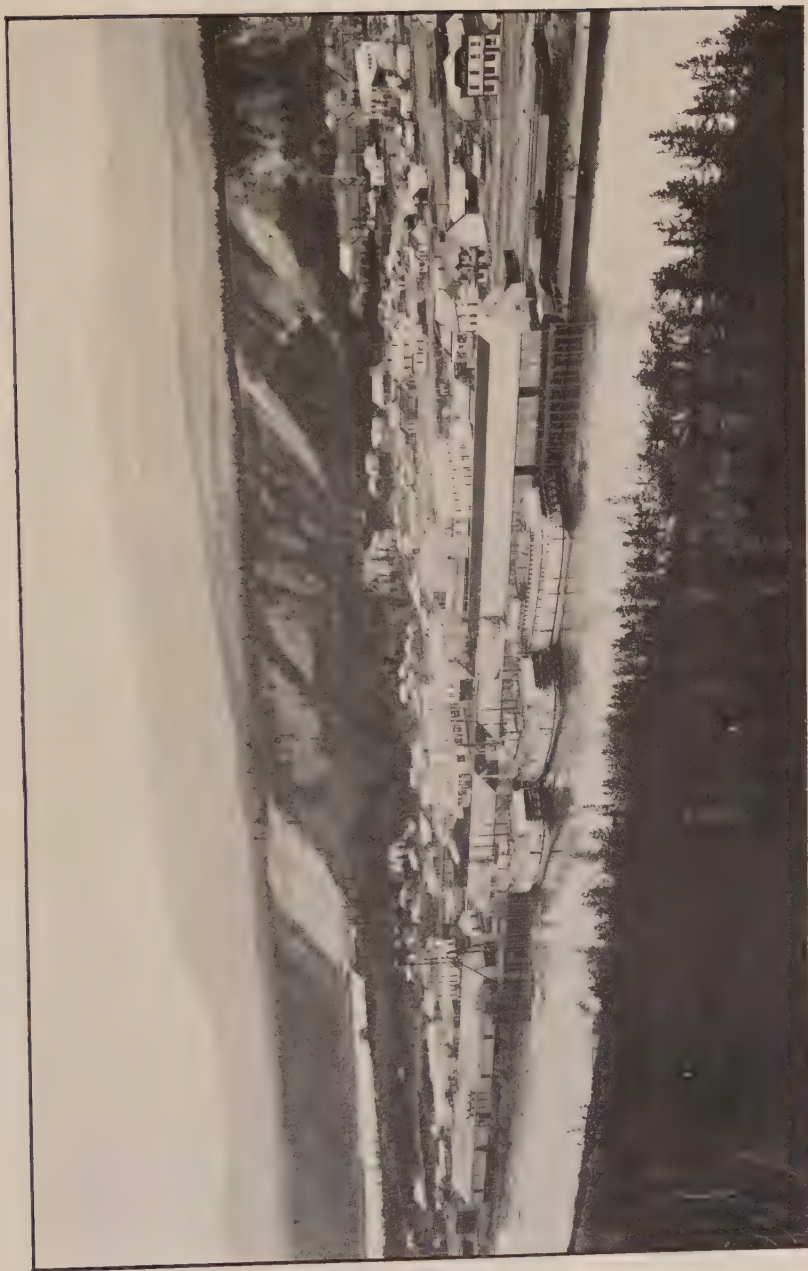
‘The distance from the head to the foot of the canyon is five-eighths of a mile. There is a basin about midway in it about 150 yards in diameter. This basin is circular in form, with steep sloping sides about 100 feet high. The lower part of the canyon is much rougher to run through than the upper part, the fall being apparently much greater. The sides are generally perpendicular, about 80 to 100 feet high, and consist of basalt, in some places showing hexagonal columns.’

‘The Whitehorse rapids are about three-eighths of a mile long. They are the most dangerous rapids on the river, and are confined by low basaltic banks, which at the foot suddenly close in and make the channel about thirty yards wide. It is here the danger lies, as there is a sudden drop and the water rushes through at a tremendous rate, leaping and seething like a cataract.’ (Ogilvie.)

During the great rush of 1897-98 hundreds of boats and scows made this perilous passage. The following graphic description has been written of the experiences of the thousands of reckless and resolute men, who fearlessly entered these rapids regardless of danger, and without thought of the disaster which befel many of them:—

'Fiftymile river brought the migrating thousands to Miles canon and Whitehorse rapids But when our indomitable swarm of gold hunters arrived there, there was only a momentary hesitation, and, the one behind the other, the boats filed into that tremendous first section of the canyon, dodged the whirlpool in the middle, rushed down the second section of the canyon, tossed around for awhile in the seething waters of the Squaw rapids, made that stupendous turn into Whitehorse, an extra grip was taken on the oars, as with rapidly accelerating speed they plunged into that final chaos of angry water, which landed them either safely below or gave the life-saving station a quick ten minutes' work. All night and day the procession continues. There being no darkness, there was nearly as many passing there at midnight as at midday. Weeks and months the procession continued, and only the ice of the fall put a stop to this, the most stupendous feat ever performed by a non-aquatic stampede of gold hunters.

'At the foot of Whitehorse (rapids) boats were baled out, and clothes and provisions laid out in the sun to dry after the drenching of spray just received. Over Lake Laberge went the white fleet of unpainted boats, and then came the final tug-of-war in Thirtymile river, which wrecked more brave fellows in a day than Whitehorse did in a week. Sunken treacherous rocks; a shallow rapid current reaching a speed in places of nearly ten miles an hour; gravel bars over which the rapid waters were lashing into foam which concealed protruding boulders and impassable shallows, mammoth rocks standing in the river in groups, as if they would bar the path of the intrepid miners and against which the current would dash itself in impotent fury, carrying everything which floated upon its surface with a devilish malignity and well-nigh irresistible force upon those flinty points which could and often did break a heavily built scow into two or three pieces with as great ease as a clay pipe stem can be broken on an anvil with a blacksmith's sledge hammer. Few indeed were the miners who passed there in the early summer without repeated hairbreadth escapes both for themselves and their property. Below Thirtymile was found the placid Lewes and mighty rolling Yukon, and boats floated serenely on to the metropolis of the great Northwest, and tied up to the shore, where boats were ten and twelve feet deep.' (*Klondike Nugget.*)



White horse, the Terminal of the White Pass Railroad, Showing Docks and Warehouses,

WHITEHORSE TO DAWSON.

From Whitehorse to Dawson there is an almost daily service of steamers, and the journey down the Yukon river is now made with absolute safety on the splendidly equipped steamers which ply on this route. The tourist or traveller has ample opportunity of viewing the Thirtymile river, which has just been described, Five Fingers and Rink rapids, and other interesting parts of the journey. To the sportsman in quest of valuable trophies, the Pelly, the Stewart and the Peel—the latter a tributary of the Mackenzie—afford excellent fields for sport. Mr. F. C. Selous, who has a world-wide reputation as a hunter of big game, and who has captured many trophies in the jungle and in the African forest, has visited the Yukon on several occasions, and secured some splendid specimens of the big game which are so abundant in many parts of the Yukon.

‘ Among the game animals can be mentioned caribou, moose and mountain sheep. There are no goats, deer or elk in the vicinity. The caribou is of the woodlands variety; plentiful along the foothills of the mountains, travelling about during the fall in large herds, the upper Klondike being a well known range of theirs. A smaller variety, known as the barren ground caribou, inhabit the Mackenzie river country. The moose, the largest wild animal in North America, is well known in all the upper Yukon region, this section furnishing the largest specimens obtainable. The horns of both caribou and moose produced in this country are handsomer and more massive than those found in other sections. A spread of five or six feet for moose antlers is not uncommon, and most caribou heads will average over thirty points, and are of most graceful contour.

‘ The mountain sheep of the country is a very different animal than the Big-Horn of the Rocky mountains, being entirely white, younger animals having patches of grey. They are peculiar to Alaska and the Yukon country, and although existing here for years they have but recently been brought to

the attention of the scientific world, and as yet are very rare in outside collections. They are often but erroneously termed mountain goats, the resemblance being their colour; the fleece and horns are totally different, even "ibex" and "chamois" are terms likewise applied to them. Farther north, in the barren grounds of the Arctic circle, is found the little known musk-ox, which do not extend their travels to the Yukon.

'The lakes contain fine trout, and the familiar pickerel. Brook trout are scarce, but the handsome greyling are everywhere in the swift water, affording delight to the Isaac Walton of the vicinity.

'Ducks, geese, cranes and kindred species abound, for this is their natural rendezvous; but even here in their chosen country they are of local distribution, very plentiful in the low swampy sections where they breed, and almost unknown in others except during migration. At this season of the year (latter part of October) the majority of the ducks follow up the Yukon valley, while the geese choose the downstream route and follow the salt water coast to California. Sandhill cranes in great number, however, pass Dawson in the fall, going up the Yukon. They are often mistaken for geese owing to their habit of travelling in V-shaped flocks and columns, but can be easily distinguished from them by the high pitch of their call note, and from the fact that a crane's flight consists of a series of flaps and a long sail on extended wings—something not observed with geese. The varieties of duck noticed are mallard, pin-tail, long-tail, green wing teal, widegon, butter-ball, blue-bill, golden eye, surf duck and harlequins.

'Grouse are well represented by five varieties, the blue grouse of the heavy timber known as hooters, ruffed grouse, incorrectly called pheasant, Canada grouse, sometimes called fool-hens, owing to their tame unsuspecting natures, allowing themselves at times to be actually knocked over with sticks; the sharp-tailed grouse, the prairie chicken of the Northwest, and



Lower Laberge, showing the head of the Thirtymile River.

several kinds of beautiful ptarmigan, a bird peculiar to cold countries, of mottled brown coat in summer, changing in winter to rosy white. This rose tint, however, is most noticeable in life, since in market specimens or mounted birds the bloom fades to immaculate whiteness.'

Bears are also numerous, and comprise the small black variety, several specimens of brown bear and the Alaskan grizzly, which attains a great size.

The sportsman who desires to devote all his time to hunting, if he selects the Pelly district, can leave the steamer at Fort Selkirk. Arrangements can be made to obtain a guide either at Whitehorse or Selkirk, together with whatever assistance may be required and the necessary outfit. There is a small steamer makes an annual trip from Whitehorse to Ross River trading post, which is situated at the mouth of Ross river, and to go by this steamer is the quickest and easiest way to reach any point in the upper Pelly district.

If the Stewart district is chosen, then it might be advisable to come to Dawson, obtain an outfit, and take the steamer *Prospector*, which usually makes several trips to Mayo and occasionally to Fraser falls. Mr. J. Keele, of the Geological Survey, in his report of 1906 on the upper Stewart river region says: 'At the mouth of Lansing river Messrs. Frank Braine and Percival Nash have established a trading post, and a small band of Indians live close by in cabins. Several Indians from Fort Goodhope, on the Mackenzie river, make regular journeys to this point, trapping and hunting along the route. A few white men make a regular business of trapping on the Hess river and its branches.

'This region offers a great field for the sportsman and explorer, most of the country between the Stewart and Pelly headwaters and the Mackenzie being quite unknown.

'Suitable boats or canoes can be poled or tracked on the main rivers well up into the watershed ranges. Several of the

higher mountain groups offering sufficient inducements to the mountain climber and huntsman are situated within a day's journey from the river.'

Writing of the game in the Peel river district, which is also reached by the upper Stewart, Mr. Camsell, also of the Geological Survey, in his report of 1906, says: 'Moose, though found over the whole region explored as far as the delta of the Mackenzie river, are never as abundant as they are on the Yukon side of the divide, and on the Peel river itself are rather scarce.

'Caribou are plentiful everywhere in the vicinity of the mountain ranges, some even being found on the plateau.

'Bears, both black and grizzly, are plentiful near the summit of the divide, and numbers of them were seen all the way down the Peel river, and particularly on the Mackenzie delta and in the mountains to the west of it. Numbers of white mountain sheep were seen on both Braine and Nash creeks. In the mountain section of the Wind river several of them were encountered on the banks of the stream, as well as the slopes of the valley. A small band was seen on Mount Goodenough, west of the Mackenzie delta, and they are said to be abundant in the mountain range to the west of this; so that the range of this animal covers the whole district explored.'

The tourist who does not desire to enter the field of sport, will come direct from Whitehorse to Dawson. There is splendid scenery all along the river, and many picturesque and grand views; high benches, gravel terraces, partially bare rounded hills, bluffs of rock and bold rampart-like cliffs. Between Selkirk and Dawson the Yukon valley cuts through a high undulating plateau. From the mouth of the Stewart to White river the Yukon averages about a mile in width, and is filled with many beautiful islands.

'Five Finger rapids are formed by several islands standing in the channel, and backing up the water so much as to raise it



Caribou in the Mountains, near the Head Waters of the Klondike.



Mountain Sheep, a species of big game found in the Yukon.

about a foot, causing a swell below for a few yards. The islands are composed of conglomerate rock similar to the cliffs on each side of the river, whence one would infer that there had been a fall here in past ages.

‘Six miles below these rapids are what are known as “Rink rapids.” This is simply a barrier of rocks, which extends from the westerly side of the river about half-way across.’

Tourists and others who have visited Dawson are agreeably surprised on seeing for the first time the Golden Metropolis of the North. As the steamer swings around in the stream, and gracefully steams alongside the wharf, the visitor is at once impressed by the long line of wharfs and large warehouses. Merchandise is being unloaded from steamers, which may just have arrived from St. Michaels, on Behring sea, 1,800 miles from Dawson, or from Whitehorse. On the upper river steamers there is invariably a large quantity of mail, which is handled as expeditiously as are the consignments of an Atlantic liner outside Moville or Queenstown.

Instead of the temporary business structures and rudely constructed dwellings, which visitors expect to find in the capital of the Yukon, there are many commodious frame houses and beautifully furnished homes; spacious stores behind the large plate glass windows of which are artistically arranged the most up to date and high-class Canadian, English and American goods. There is no one who visits Dawson but admires the handsome public buildings in which the business of the different departments of government is transacted. Government House and the Court House front on the river, and are situated respectively on the north and south end of the Government reserve. The Administration building is situated in the rear portion of the reserve, and is surrounded by a well-appointed park (Minto park), around which maple, fir and other trees are planted. In front of the building is a beautiful lawn, which during the summer is kept like a bowling green.

Behind the Administration building are the tennis courts, which are well patronized. Baseball, football, cricket and other athletic games are played on the recreation ground adjoining the south of the Administration building.

Among the other prominent buildings in the city are the two hospitals, one of which has lately been built along the most modern lines. There is a Carnegie library, containing over 5,000 volumes, amongst which are the most recent works of all classes of literature and other valuable reference books. This building contains a large general reading room, lecture room, ladies' reading room, and a room where miners and others can transact business. Then there is the Dawson Amateur Athletic Association building, in which there is a large skating rink, a curling rink, gymnasium, reception room, billiard room, &c. There is a Masonic hall, and a large hall belonging to the Arctic Brotherhood, in which banquets, mass meetings and political meetings are held. There are also several spacious hotels providing ample first-class accommodation for tourists.

In the principal business and residential sections of the city are wide and substantially built sidewalks, upon which pedestrians can walk along the different avenues from one end of the city to the other. The Canadian Yukon Telegraph line extends from the boundary line 100 miles north of Dawson to Vancouver, a distance of over 2,000 miles. There is a morning and an evening newspaper, and each issue contains a greater amount of telegraphic despatches than can be found in any paper on the American continent published in a city of twice the population of Dawson. There is telephonic communication with all the principal creeks in the Klondike district, and miners fifty miles from Dawson can at once communicate with any of the business houses in the city.

From Dawson tourists can visit any part of the Klondike gold-fields, and see the famous claims on Bonanza and Eldorado which have produced such enormous wealth. Within a short



OF WHITE IRON IN THE STARS
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distance of Dawson the visitor can see the various modes of placer mining, huge dredges handling every day thousands of cubic yards of auriferous gravel, and hillsides being washed down by hydraulicking. A splendid trip can also be made up the Stewart river as far as Fraser falls on the steamer *Prospector*. If, however, the time of the traveller is limited, a few days can be spent in Dawson, and the journey down the Yukon can be resumed on some of the lower river steamers to St. Michaels. On the 21st of June hundreds of people climb the mountain behind Dawson to see the midnight sun, which disappears only for a short time. On the lower river, however, as soon as the steamer enters the Arctic circle, the sun can be seen the whole twenty-four hours. The scenery on the lower river somewhat resembles the scenery between Whitehorse and Dawson, with the exception of the Yukon flats. On this stretch of the route the river is about sixty miles wide and filled with islands. From St. Michaels passage can be taken on ocean steamers to ports on the Pacific coast.

SYNOPSIS OF GAME ORDINANCES.

Except as provided, the following beasts and birds shall not be hunted, taken, killed, shot at, wounded, injured or molested in any way during the following times of the year respectively:—

Musk-ox, elk or wapiti, moose, caribou, deer, mountain sheep or mountain goats, between the first day of March and the first day of September in each year;

Grouse, partridge, ptarmigan, pheasants and prairie chickens, between the fifteenth day of March and the first day of September in each year;

Wild swans, wild ducks and wild geese, snipes and pipers or cranes, between the first day of June and the first day of September in each year.

No one person shall have the right to kill during the same

season, except as hereafter provided, more than two elk or wapiti, six moose, two musk-oxen and six deer.

Any person who kills any of the above beasts shall report himself at the Mounted Police detachment on his way to Dawson or the creeks, and declare his name, the number of beasts killed and the place where he killed them.

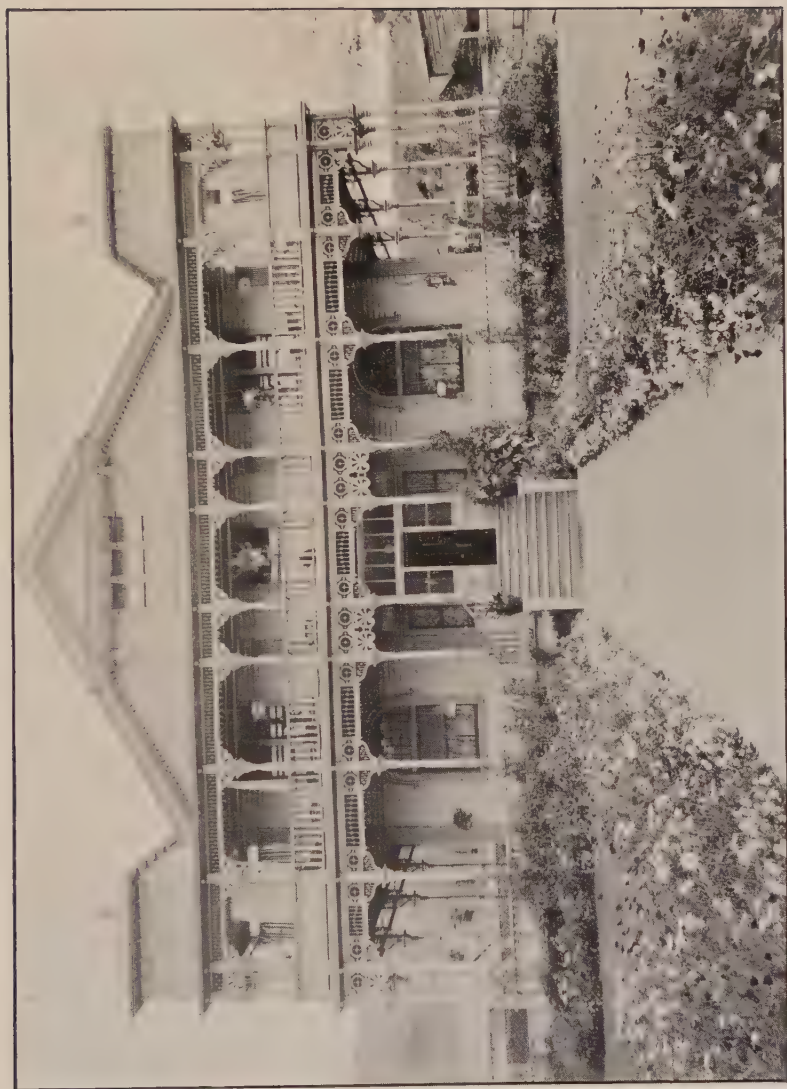
All members of the Royal Northwest Mounted Police are game guardians; and any game guardian may call upon any person at any time found in the possession of game to state when, where and from whom it was obtained, and whenever he has reason to suspect that any person is illegally in the possession of game he shall have the right to inspect any bag, or other receptacle, vehicle or other means of transportation in which he supposes it to be, and any person refusing, molesting or obstructing the said game guardian in the accomplishment of such duties is liable upon summary conviction to a penalty not exceeding \$100 and costs, and in default of payment to imprisonment not exceeding one month.

Any of the beasts or birds hereinbefore mentioned may be lawfully hunted, taken or killed, and eggs of any of the birds or other wild fowl so mentioned may be lawfully taken,—

1. By explorers, surveyors, prospectors, miners or travelers who are engaged in any exploration, survey or mining operations, or other examination of the Territory, and are in actual need of the beasts, birds or eggs for food.

2. By any person who has a permit to do so granted by the Commissioner or any officer or person duly authorized by him, permitting such person to take or kill, for scientific purposes, or to take with a view to domestication, any number, not exceeding four of each of the said beasts or birds, or to take eggs not exceeding twelve of each of any of the said birds or of any other species of wild fowl.

Every such permit shall set forth in detail the name, address or calling of the person to whom it is granted, the



Commissioner's Residence, Dawson, Yukon Territory.

object for which it is granted, the number of each species or eggs which it is intended such person may kill or take, and the period of time during which the permit is to be in force.

It shall be unlawful for any person to use poison or poisonous substances for the purpose of taking or killing any birds or beasts of any kind whatsoever, and the fact that any person places any poison or poisonous substances in such a position that it may be reached or taken by any bird or beast shall be proof that it was used for such purpose, and shall be deemed an offence against the provisions of the game ordinance.

Every person who has in his possession without lawful excuse during the closed season any beast, bird or eggs, killed or taken during such close season, shall be liable on summary conviction to a penalty not exceeding \$500, and in default of payment to imprisonment for a period not exceeding three months.

EDUCATION.

A superintendent of schools for the Yukon Territory was appointed in 1902, and in the same year a general system of education was inaugurated throughout the Territory. The course of study prescribed is similar to that adopted by the new provinces of Alberta and Saskatchewan. No teachers are employed unless they hold at least a second-class certificate, with normal training, and efforts have been made to employ only specialists in the Dawson public school. The teachers in this school have been selected from some of the best educational institutions in Canada.

The high school branch of the Dawson public school was instituted in 1903. There are two teachers in charge of this branch, one a specialist in classics, modern languages and history, the other a specialist in mathematics and science. In 1904 a laboratory was established with apparatus and materials for the prescribed work in physics and chemistry. In the high

grades of the Dawson high school the course of study prescribed by the University of Toronto for pass and honour matriculation is carefully followed, and candidates were prepared for university matriculation in the years 1905 and 1906. As a result of the examinations, several candidates were awarded honours in Classics, Mathematics, English, Physics and Chemistry.

There are eight rooms in the Dawson public school, three of which are devoted to high school purposes, and one to the kindergarten, the latter being supplied with complete equipment for this work. Fire exits are provided for every room, and a regular fire drill is practised by the pupils, who can be out of the building in half a minute after the sounding of an alarm.

In certain districts where the number of children does not warrant the establishment of a regular school under the provisions of the school ordinance, regulations have been made by the Commissioner for the establishment of 'assisted schools,' but the average attendance must be at least five pupils between the ages of six and sixteen, and the course of studies prescribed by the Council of Public Instruction. Teachers of 'assisted schools' are also appointed subject to the approval of the Commissioner and Superintendent of Schools.

AGRICULTURE,

Though the agricultural resources of the Yukon are beyond doubt of considerable economic value, yet it must not be considered that the territory is suitable for occupation, at the present time, by a large number of agriculturists depending absolutely upon this industry. A large agricultural community can only exist in a country where the produce of such an industry can be disposed of at a reasonable profit, or where access can be obtained to markets at a distance, provided transportation rates will permit of fair competition. In the Yukon

the principal industry is mining, and agricultural development must necessarily proceed according to the requirements of the population engaged in the mining industry. Farming operations can only be successful so long as those who are engaged in agricultural pursuits produce no more than is required for consumption within the Territory. Up to the present time, however, the number of agriculturists is not sufficient to supply the local demand for farm produce, and the quality of some of the products is not quite equal to the imported article; but as Professor Macoun has pointed out in his report on the Yukon, 'these matters will right themselves in time, but the climate must not be blamed for the ignorance of the cultivator.' Careful and systematic farming operations, with due regard to the peculiarities of the climate, would abolish the importation into the Yukon of many of the agricultural products required by the people of Dawson and surrounding district. If hay, oats, potatoes, &c., were grown in such quantities as would supply the local market, the price would be much less than is paid at the present time for imported products, the transportation rates would be avoided and the consumer would derive the benefit. Instead of the people of the Yukon paying large sums outside of the Territory for these products, the agriculturists in the Yukon would transact the business, and the money would be retained in the Territory, and probably invested in such a way as would aid in its future development.

It was computed by Dr. Dawson in 1887 that within the drainage area of the Yukon, as far north as Fort Selkirk, there was an area of 60,000 square miles, of which a large proportion might be utilized for the cultivation of crops, and in which cattle and horses could be maintained for local purposes. Since that time there have been discovered other important agricultural districts, which would afford ample scope for farming operations, and the extent of territory available for agricultural purposes is greatly in excess of the area computed by Dr.

Dawson. It might be interesting to quote here an extract from Dr. Dawson's report of 1887, showing how much he was impressed at that time by the agricultural possibilities of the Yukon; and it is also important to note that his remarks had immediate reference to the Pelly river district and the valley of the Lewes:—

‘To instance a region which produces the general conditions of the Yukon district and adjacent northern portions of British Columbia, we must turn to the inland provinces of Russia, to which allusion has already been made in connection with climatic features. The province of Vologda, in European Russia, appears to offer the nearest parallel. It is circumstanced relatively to the western shores of Europe as is this district to the western shores of the North American continent. Its area is 155,498 square miles, situated between the 58th and 65th degrees of latitude. The climate in both cases is a continental one, in which severe winters alternate with warm summers, and the actual degrees of cold and heat, so far as our information goes, are not dissimilar. There is no very heavy rainfall in either region, such as we find near the western coasts bordering on the Atlantic and on the Pacific respectively. The agricultural products from the province of Vologda are oats, rye, barley, hemp, flax and pulse. The mineral products comprise salt, copper, iron and marble, but the precious metals do not appear to be important, as in the Yukon district. Horses and cattle are reared, and the skins of various wild animals, as well as pitch and turpentine, are among the exports. The population of the province is 1,161,000.’

There is no reason why the agricultural products grown in the province of Vologda should not be grown equally as well in the Yukon. During the past few years comparatively large quantities of oats, potatoes and vegetables have been grown along the Yukon valley, particularly in the vicinity of Dawson, and in nearly all cases excellent results have been obtained. It is computed that the quantity of potatoes grown near Dawson last season and placed on the market aggregated 200 tons. It has been estimated that the population in the Yukon consumes annually over \$200,000 worth of potatoes. During the present

winter (1906-07) potatoes were sold at a fairly low rate, and in the spring it was found that there was a scarcity in the market. In the latter part of April one farmer near Dawson, who had held his stock of home-grown potatoes during the winter, sold $13\frac{1}{2}$ tons at 13 cents per pound, which brought him a round sum of \$3,500. Potatoes grown in the Yukon are quite equal in size to the imported product, and when the proper kind of seed is planted in suitable soil and attention is given to the cultivation, potatoes can be grown fully equal in quality to the best outside product. The best quality of potatoes so far have been grown on the islands in the Yukon river. On the land surrounding Dawson, either in the valleys or on the benches, potatoes of good quality can only be grown after the land has been cultivated for a few years. On an island in the Yukon river at Ogilvie 175 pounds of potatoes were planted on the 12th of May, 1906, and by the first or second week in September the crop was ready for lifting, and yielded 8,000 pounds. The ground was ploughed as early in April as the frost would permit, stable manure and about 300 pounds of lime per acre being applied. The potatoes were planted as near the surface as possible, and hilled up as the vines grew. It is estimated that during the present season a much larger quantity of potatoes will be grown than in former years, and some of those interested in agriculture predict that within the next few years there will be a sufficient quantity of potatoes grown to supply the market. Besides what is required for the local market, a considerable quantity of potatoes is shipped every year to Fairbanks, and other points in Alaska.

On an island in the Yukon at Ogilvie three or four bushels of oats per acre were sown about the first of May, and harvested about the middle of August. The yield was about two tons of oat-hay per acre, which was sold at an average of \$50 per ton. Native hay, averaging one and one-half tons per acre, was also harvested about July 15.

About thirty miles up the Stewart river is what is known as the Mazie May ranch, owned by Mr. Samuel Henry. Mr. Henry applied for this land in 1897, and in the summer of that year harvested 26 tons of native hay. During the last five years about 100 acres have been under cultivation, and crops of oat-hay have been annually taken from the land. In 1902, 125 tons of oat and native hay were cut and sold from this ranch. Mr. Henry says he has no difficulty in selling all the hay he can grow. The native hay is cut about the middle of July and the oat-hay about the first of August. After the hay is harvested it is placed in stacks for about three weeks, and then baled in a 16 by 18 baling press. It is then shipped to Dawson by steamer, if possible, and if a steamer is not available it is brought down the river on rafts. The rate for carrying this hay to Dawson, a distance of about 100 miles, is \$7.50 per ton. Mr. Henry has also grown rye and barley, but finds the oat-hay most profitable. A mixed lot of 800 pounds of timothy, clover and red top, was sown on a piece of well cultivated land of about eight acres, but the result was unsatisfactory. Clover seems to grow well in a wild state around Dawson, and there does not seem to be any reason why it should not grow equally as well on cultivated land if it is properly seeded. Mr. Henry is of opinion that much of the seed may have been lost by being covered too deeply. Last year the native hay grown on this ranch was sold at from \$55 to \$60 per ton, and during the present winter the oat-hay was sold at \$110 per ton, when outside hay was selling at \$120.

In the fall, as soon as the crop has been taken from the ground, it is ploughed to a depth of about six inches. As early in the spring as possible the land is cultivated, a disc harrow being used to cut and pulverize the sod. The seed is then sown, covered with a square-tooth harrow and rolled in. The price of oat seed in Dawson at the present time is six cents per pound, and 100 pounds of oats are sown to the acre.



Yukon Horticultural and Industrial Fair, September, 1903, Dawson, Y.T.

The following is a list of the implements on this ranch, namely: 5 ploughs, 2 disc harrows, 1 spade harrow, 2 mowers, 2 sulky rakes, and 1 steel baling press, 16 by 18.

In discussing the price of agricultural implements, Mr. Henry says that the importation of these articles is very expensive. For instance, the original cost of the steel baling press was \$350, but before it was delivered on the ranch it cost \$1,200, or two and a half times the original cost.

At the head of Flat creek, about sixteen miles from Dominion, there is a ranch of 160 acres, on which are grown oat-hay, turnips, potatoes, vegetables, and a large quantity of native hay is also harvested. On this ranch there are eight cows and a bull, hogs, poultry, &c. Dairy farming is carried on on a small scale, butter being made, for which there is a ready demand on the creeks in the locality. Besides the native hay required for the cattle, a large quantity is sold to freighters. It is estimated that along the Flat creek valley there are twenty square miles of good agricultural and meadow land. Of the large quantity of excellent native hay which grows wild in this valley, only a comparatively small quantity is harvested, apart from the ranch, some freighters cutting only as much as is required, under permit, for feed for their horses. There are also several farms situated along the Klondike valley.

About four miles up the Pelly there is a farm of 100 acres, which supplies oat and native hay to the roadhouses along the winter trail, and also to cattlemen who drive cattle over the winter trail in the spring, the hay for the cattle being placed at different points along the trail. Most of the root crops grown in this vicinity are disposed of at the roadhouses along the trail. Oats have been ripened and threshed in the Pelly district, but not to any great extent.

In the Duncan and Mayo districts sufficient garden produce is grown to fill the requirements of the community; and sufficient wild hay is cut to supply the local demand.

The following is an extract from a report by Professor John Macoun on the Yukon Territory:—

‘ . . . July 16th I crossed the Yukon by the ferry, and visited the gardens and farm in West Dawson. The gardens are on the flat along the Yukon, and seem to have been established before any others in the district. Everything was in a forward state for the season. Munro’s farm is on a hill about 300 feet above the river, and about a mile west of the gardens alongside of it. Here was actual farming, and besides the usual garden vegetables there was at least 25 acres of oats which had been sown for fodder. To the north of the oat fields 25 acres were cleared and were being broken up for a summer fallow.

‘ On August 6th I again visited this farm, and found a marked change in the growth of the oats. Some of the seed had been sown late and some early, but the greater part late and on freshly broken ground. As a result of this the crop was patchy, and tall and short grain grew in close proximity. The land ploughed the year before produced the earliest and best growth of straw. Nearly all the grain was in the milk, but where there evidently had been a crop last year I pulled up specimens of wheat, barley and oats that were far advanced towards maturity. Fine specimens of oats were gathered that were colouring and had very remarkable grain. Instead of one full grain and an abortive one in the fascicle there were always two and often three. This condition I had never seen before, but it seems to be universal at Dawson, as later I noticed it in other fields.

‘ On August 23, I again visited Munro’s farm in West Dawson. He was then cutting his oats for fodder. In his latest oats the Volunteer barley was all ripe, and this was not sowed until June 5. In this case the barley ripened in 79 days. Tables in my possession show that there is no frost from May 23 to August 23, or 91 days.

‘ Owing to the high latitude of Dawson, $64^{\circ} 15'$ north, the altitude of the sun above the horizon is never very great. For nearly three months, however, there is scarcely any darkness and the sun is above the horizon over three-fourths of the time. The rainfall and snowfall are both light. This light deposition, combined with so much sunshine, gives much warmth, and on exposed soil great evaporation. These conditions are so varied that while on one side of a creek there may

be two or more feet of moss and beneath that permanent frost, on the other side the soil may be so exposed to the sun that no moss can exist, and only the deepest rooting grasses can maintain a foothold. Hence people talking about deep mosses speak of land facing the north, while those who claim irrigation is necessary have in their minds terraces exposed to the sun. This being the case, any one writing on the subject of vegetable growth or the production of crops must take all the circumstances into consideration.

‘ . . . From what I saw of growing crops I am satisfied that the soils are good. That in the river bottoms was alluvium, overlying the river gravels. On the hills the soils seemed to be chiefly loams, with sometimes sand in greater or less proportion. As no glacier action had taken place, the soils were very local in character, and largely resulted from the disintegration of the rocks of the locality.

‘All attempts at cultivation were apparently successful, even in the Dawson swamp. When the ground is properly worked, the soil mixed, and the ice or frost stratum in late summer is found at a depth of eight or ten feet, there will be a complete revolution, and all crops will mature much earlier. I took notes during the seven weeks I was at Dawson of the growth of all cultivated grains and vegetables, and below will be found my remarks written at the time. Everything, be it native or exotic, grew surprisingly, and while I never found any cultivated thing a failure, I must say the same of weeds. In every case they were a success, and numbers of them were natives of California.

‘White clover, alsine and red clover, as well as timothy, grew wonderfully well by roadsides and on dry soil. In the swamp muck of Dawson much of the clover on lawns, sowed in the swampy soil, looked yellow and had a sickly appearance. Timothy acts similarly; when sowed in the bog it is sickly and yellow looking, while along dry roads, in the woods or on the hillsides it is quite tall and has a seed head from two to three inches in length.

‘Barley is certainly well suited to the Yukon district. On August 6, on the farm of West Dawson, I found grain quite hard mixed with oats that were much later in appearance. On the 18th August I visited the gardens in West Dawson along the Yukon, and found oats being cut for fodder. Mixed with the oats were many barley heads fully ripe and others that had hard grain. In all cases the grain was large. West Dawson

was again visited on August 23, and Mr. Munro was then cutting his oats for fodder. In his latest oats the Volunteer barley was all ripe, and this was not sowed until June 5, so that the ripening of barley at Dawson is an assured fact.

‘Oats do well everywhere, but are seldom even a fair crop on ground just broken up and then seeded. In all cases I found good oats where sown on second year cultivation. The grain was earlier, taller and better in every way. On August 6, I found self-sown oats on Munro’s farm on West Dawson fit to cut, but only a few bunches on dry ground. Barley was ripe at the same time under the same conditions. This showed me that up to that date there had been enough heat to ripen oats and barley if sown early on dry soil.

‘In the matter of wheat I do not speak positively, but I believe that after a few years wheat will ripen on all fairly warm soils, although at present its ripening is doubtful. As far as my investigation went I could find no person who had sown wheat. Mr. Munro had sown oats grown somewhere in the United States, and he informed me that he was led to believe that the wheat mixed with it was spring wheat. Instead it nearly all turned out to be fall wheat and only made leaves, stooled out, and its roots penetrated the soil to a remarkable depth, and so remained when I saw it on August 23. That it will ripen next summer is to me a certainty, and I trust Mr. Munro has not ploughed it all under. Of the spring wheat I may say it was generally taller than the oats, but scarcely as ripe. All the ears were filled to the tip with grain, and the grain was filled out and since has hardened so as to give the appearance of ripe grain. Since my return to Ottawa I have had the grain tested, and the report on the Yukon wheat received from the grain tester, Mr. Ellis, of the Experimental Farm, is as follows: 100 grains planted; 100 grains germinated; 100 grains made vigorous growth. Germinations very quick and growth exceptionally good.

‘When grain ripens in the country and is again sown there, it will take on the conditions of its environment and mature earlier, and early frosts, like those attributed to Manitoba, will have no effect as the crop will mature before they come. I may remark here that the wheat in the Northwest ripens earlier now than it did twenty years ago, and many people believe that it is the climate that has changed, whereas it is only the wheat that has adapted itself to its environment.’ (Macoun.)

Writing of the agricultural possibilities of the Yukon, Dr. Dawson says, that to-day the Yukon Territory 'may well be characterized by the term which has been employed in connection with the Mackenzie basin, a portion of "Canada's great reserve." . . . In the future there is every reason to look forward to the time when this country (Yukon) will support a large and hardy population, attached to the soil and making the utmost of its resources.'

At the present time, however, we can only say that the development of agriculture must necessarily depend upon the development of the mining industry. Under existing conditions the Yukon agriculturist could not possibly compete in outside markets. The price of labour is high, and for competition in agricultural products, distance and transportation rates are prohibitive.

HORTICULTURE.

Many islands in the Klondike valley and along the Yukon have been cleared and made into gardens, in which vegetables of excellent quality are grown. Last season a comparatively small quantity of vegetables were imported, the market gardeners near Dawson being almost able to supply the demand. The seeds of nearly all vegetables are sown in hot-houses early in February, and then transplanted to cold frame boxes, where plants which are intended to be planted outside are strengthened and prepared for outside planting.

Cabbage plants are sold at \$2 per 100 in boxes containing that quantity, or in larger boxes at a similar rate. As soon as cabbages weigh about a pound each they are placed on the market at 50 cents a head. Later in the season, however, as they increase in size, the price ranges from 15 cents to 6 cents per pound. Yukon cabbage is placed on the market early in August. Between the opening of navigation and the first of August this vegetable is imported, and sold at from 20 cents to 8 cents per pound according to quantity and competition.

Lettuce grown in hot-houses are sold in Dawson about the latter part of March at 25 cents per bunch. For a short time the demand will reach about 100 dozen per week at this price. In a few weeks, however, the price is reduced to two bunches for 25 cents, and then the demand increases to about 150 dozen per week. In summer the usual period between the time of transplanting and the time when the lettuce is placed on the market is three weeks. The leaves are exceedingly crisp and tender.

Messrs. Paddock Brothers, of Dawson, have about 10,000 feet under glass. Last year this firm sold over half a ton of tomatoes at from 75 cents to 50 cents per pound; and they have 1,000 tomato plants, which they expect will yield about 20 pounds per plant during the coming summer. It is expected that ripe tomatoes will be on the market in Dawson by the first of July. The Yukon tomatoes are quite equal in quality to what is grown on the outside, and some weigh as much as one pound each. Tomatoes grown in the hot-houses near Dawson are not placed on the market until they are almost ripe, whereas imported tomatoes are shipped green and lose much of their flavour.

Nearly all other vegetables are grown in sufficient quantities to supply the market. Cucumbers are ready by the first week in April, and are sold at from 75 cents to 50 cents each. Celery is ready for the market by the 30th of June, and sells from 50 cents to 25 cents per bunch. Peas are also grown in large quantities, and range from 40 to 15 cents per pound.

Writing of the growth of garden produce in the Yukon valley, Professor Macoun says: 'Growth of vegetables is so rapid and vigorous that to a person coming from the east it is simply astounding. When I reached Dawson on July 10 early cabbages were being cut, and on August 5 their weight ranged from 3 to 5 pounds. On the 22nd, when I made my last visit, hundreds of matured cabbages and cauliflowers had



The Governor General at Dawson, August 14, 1900.

been cut and sold. I measured the two lower leaves of a cabbage cut the day before, and these placed opposite each other had an expansion of 3 feet 9 inches with a breadth of 16 inches. I cannot call this even an average one as there were hundreds larger but later in maturing. Cauliflowers were from 6 to 10 inches in diameter, but I was told larger ones had been cut.

‘No doubt the constant daylight gives the force necessary to expand the growing organs of the vegetables in cultivation, but behind the long day are climatic conditions that as yet are little understood which in my opinion are the prevailing factor in this wonderful growth.’

Flower seeds are also sown under glass, and the more sensitive varieties can be replanted in the open by the 24th of May. Most flower seeds, however, can be sown in the open ground by May 10. Florists say that much of the soil in its natural state is detrimental to the bloom of plant life, and that it requires to be well worked before successful results can be obtained. They prefer the soil taken from the islands and bars along the river valleys. This soil requires very little treatment, and with some additional fertilizer will produce almost any flower grown out of doors; which mature before September 1st.

The Iceland poppy grows splendidly in the Yukon, and when once planted it seeds itself and continues to spread. In some cases the pansy and pink also bloom without replanting, even after a very severe winter.

The bloom and foliage of all plants are strong, bright and clean. Sweet peas will grow from 9 to 12 feet in height. Canary creeper and Japanese hops will run from 25 to 30 feet in a season, while the nasturtia grow very rank with foliage of immense size.

The bloom of the stocks, asters and nicotine cannot be surpassed in quantity or quality.

TIMBER.

A few years ago there was a large demand in the Yukon for lumber. A large quantity was required for the construction of houses, for city improvements, for the construction of flumes to carry water from streams to the different mining claims to which water rights were appurtenant, and for the construction of sluice-boxes and power-houses erected in connection with mining plants installed on the principal creeks. The establishment of a mining camp of the magnitude of Dawson, and the enormous quantity of lumber required within such a comparatively short period, created great activity in the lumber industry, and the four sawmills in Dawson, aggregating a capacity of 90,000 feet, were working night and day during the summer season.

The demand for lumber in Dawson may be said to have reached that point where the output is governed by the quantity required for maintenance of buildings and other improvements in the city. On the creeks, however, the operations of large companies necessitate a continual supply. Dredges, parts of which are native lumber, are being constructed, several large water grants necessitate the construction of great lengths of flume, reservoirs and impounding dams are being built, and the general repair of water conduits already constructed may be said to have considerably increased the demand on the creeks for lumber. The Yukon Consolidated Gold Fields Company erected a sawmill on the Twelvemile last fall, of a capacity of 30,000 feet, and have been manufacturing their own lumber during the past winter.

An enormous quantity of timber has been cut in the Klondike district for mining operations. Wood is the only fuel that has been used up to the present time in thawing the frozen ground, and it is, therefore, an essential factor in the developing and working of claims. At one time a certain quantity of wood piled on a claim was accepted as representation under



Winter mining on Dominion Creek.

the old placer mining regulations. Under the Yukon Placer Mining Act, however, this mode of representation was abolished, and in the computation of the value of work as defined by the schedule of representation, the cost of wood used for fuel has been included. In consequence of the enormous quantity of timber used as fuel in connection with mining operations, nearly all the timber of any importance has been cut on the creeks in the Klondike district proper.

Large quantities of excellent timber are cut annually on the upper Klondike for lumber and fuel, and floated down the Klondike river to Dawson, where the logs are caught in booms adjacent to the sawmills, and the smaller timber is piled on the beach for fuel. Besides the supply from the upper Klondike, good timber for fuel is found in the Indian river district, and along the tributaries of the Yukon north of Dawson. From Indian river the wood is brought down the Yukon in rafts, which are moored along the Dawson water front, and from the district north of Dawson it is hauled over the ice by sleighs during the winter.

There is also a large extent of timber along the Stewart and Pelly and their tributaries. Owing to the distance from Dawson, however, very little of this timber has been cut except what is required for mining purposes on the creeks and tributaries of these rivers. Writing of the timber on the upper Stewart, Mr. J. Keele, of the Geological Survey, in his report of 1906, says:—

‘The principal forest trees are white and black spruce, balsam, poplar and birch. The limit to which trees grow on the mountain slopes varies from 1,800 feet to 2,800 feet above the river.

‘The white spruce is the most valuable tree, and furnishes good timber for building and mining purposes. The best groves of this tree are found on the islands or on the alluvial flats along the river, but good specimens occur in scattered groups on the slopes to a height of 2,000 feet above the river in the lower valleys.

‘There is a marked deterioration both in the size and appearance of the spruce as the more northerly branches of the river are approached.

‘The balsam fir occurs only on the valley slopes mixed with spruce, beginning at an elevation of about 1,200 feet above the river and continuing upward to the limit of trees. On the slopes of the Ogilvie range, however, the balsam disappears entirely, its northern limit in this area being about the forks of Rackla river.’

On the Pelly river between the Macmillan and the Lewes the northern exposures are thickly wooded.* There are numerous groves close to the river, with good spruce up to two feet in diameter. Spruce of the same size is also found along the upper Pelly, but not so plentiful. On Moose creek there is a beautiful grove of jackpine. The grove is about two miles in length, and the trees will average about sixteen inches in diameter. It is considered that the best timber in the Territory is situated on the Macmillan, a tributary of the Pelly. The Macmillan is well timbered for about 100 miles from its mouth, the breadth of valuable timber along the valley being about half a mile in many parts. The spruce is straight, tall, and averages about twenty inches in diameter; some have a diameter of about three feet. The trees carry the size well up, and furnish five twelve-foot logs to the tree.

*The prevailing trees on the river-flats of the Pelly are cottonwood, aspen, alder, spruce and willows.

THE RAIN FALL.

The open season in the Yukon Territory is characterized by its great drought at the time the mining operations can be best conducted. During the early part of the season, in the month of May, there are occasional rains of many hours' duration, which increase the water supply very materially. During the month of June there are no rains, and according to past

* Dr. Dawson.



Discovery Dredge, Bonanza Creek.



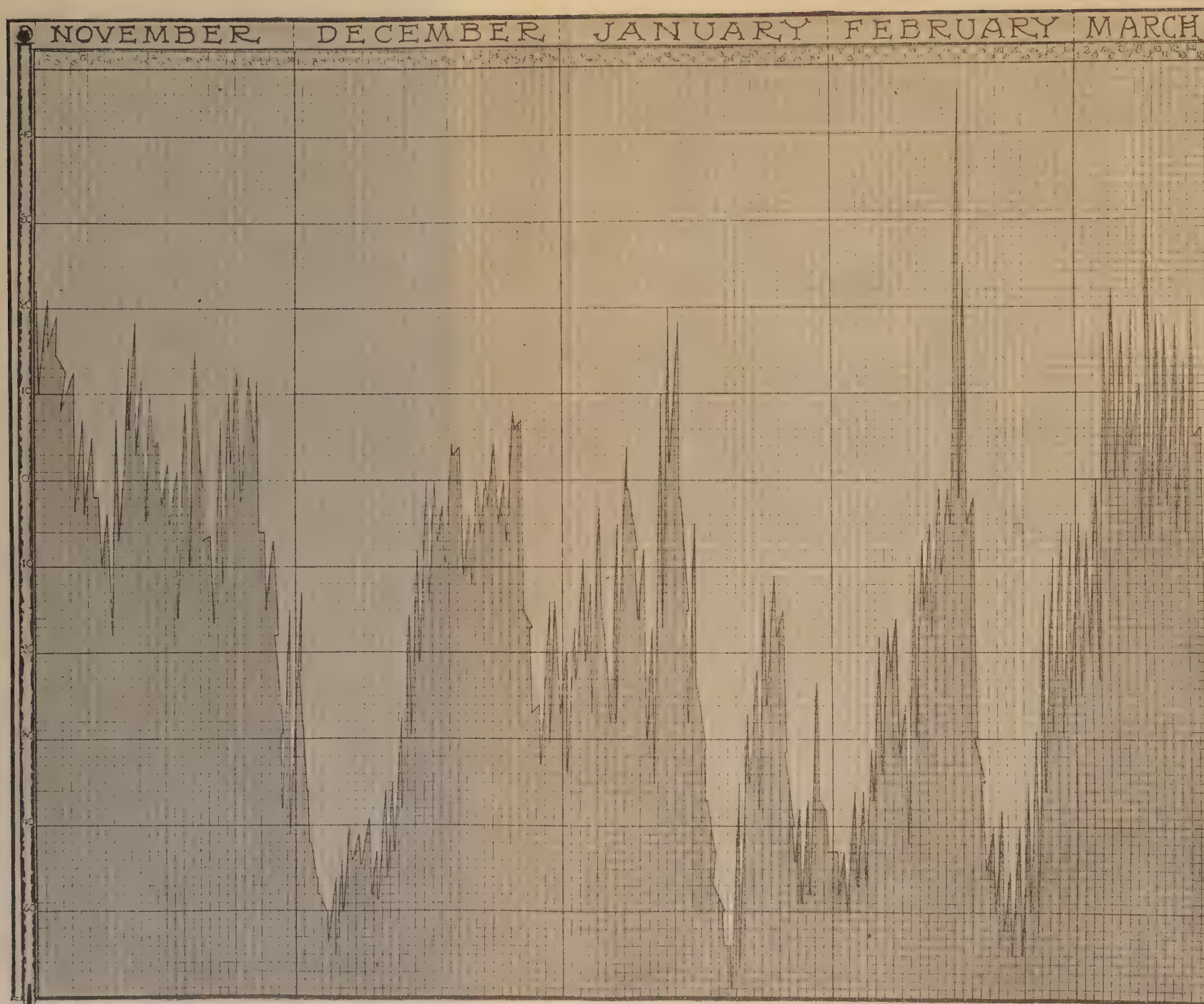


Chart showing Variation in Temperature from November, 1906, to March, 1907.

records none are expected between the first week in June and the fifteenth of July. During that time the mining operations depending on rains for their water supply are at a standstill. The fall rains commence about the first week in August and continue until the freeze-up.

THE SNOW FALL.

On account of the dryness of the atmosphere and the severe cold the snowfall is extremely small. The first snows of any account come in October, although at that time the hilltops are already covered for many days before. If the temperature is colder than ten below zero Fahr. one cannot expect any snowfall. The snowfall comes at intervals during the winter when the temperature rises above 10 below zero. The depth of snow varies with the temperature. In extremely mild winters there are fifty inches, but on the average the depth does not exceed thirty-six inches.

TOTAL PRECIPITATION DURING THE SUMMER MONTHS.

Year and Month.	Precipitation in inches.
1906—April.....	0.42
May.....	2.00
June.....	0.92
July.....	1.20
August.....	1.44
September.....	1.06
Total for the open season.....	7.04 inches

THE TEMPERATURE.

The temperatures hereunder given were taken from the official records kept by the Royal Northwest Mounted Police. The table shows the average maximum and minimum temperature for each month. The average temperature of the month was deduced from the daily temperatures. The accompanying sketch shows the fluctuation of the temperature during the months of November, December, January, February and March, in the year 1905-1906.

MONTHLY TEMPERATURES FROM MAY 1, 1905, TO MAY 1, 1906.

	Maximum.	Minimum.	Average.
1905—May ..	74 above Fahr.	26 above.	46 above.
June.....	82 " "	33 " "	57 " "
July.....	83 " "	36 " "	61 " "
August.....	81 " "	26 " "	54.5 " "
September ..	58 " "	19 " "	37.5 " "
October.....	44 " "	4 below.	25 " "
November.....	47 " "	23 " "	8.5 " "
December.....	11 " "	43 " "	13 below.
1906—January!	14 " "	69 " "	35 " "
February.....	10 " "	39 " "	14 " "
March ..	50 " "	17 above.	10 above.
April ..	53 " "	10 below.	31 " "
May ..	77 " "	25 above.	46 " "

THE GRADE OF STREAMS.

The grade of streams, one of the most essential conditions necessary in a placer camp, is a subject which has received, within the last few years, a lot of attention. All pumping plants but two have been replaced by ditches and flumes where grade was sufficient to conduct the water from the neighbouring tributaries. The gradients of the gold-bearing streams are seldom found sufficient for the disposal of the tailings from the mining operations without resorting to artificial means. It is exceptional to find a gold-bearing stream where the natural grade can be used to advantage in sluicing operations.

TABLE SHOWING THE GRADE OF STREAMS.

Name.	Average Grade per Mile.
Klondike River.....	13.6 feet.
Bonanza Creek.....	45 "
Eldorado ".....	50 "
Hunker ".....	40 "
Gold Run ".....	50 "
Twelve Mile River.....	50 "
Little Twelve Mile River.....	150 "
Tombstone ".....	150 "
Rock Creek.....	40 "
Sulphur ".....	40 "
Mayo River	10 "

STREAM VOLUMES.

The unit of measurement as prescribed by law in this Territory is the 'miner's inch.' It is defined in the Placer Mining Code as 'half that quantity of water that will pass through an orifice two inches high by one inch wide, with a constant head of seven inches above the top of the orifice.'

This amount of water is approximately 1.5 cubic feet per minute.

The expression 'a sluice-head' is a favourite one of the miners, meaning the amount of water that will be sufficient to wash the output of four men shovelling-in. In other words, it is the amount of water that will go through a box 10 by 12 inches set on a 9-inch, to the box length, i.e., 12 feet, grade, and the depth of the water in the box to be 5 inches.

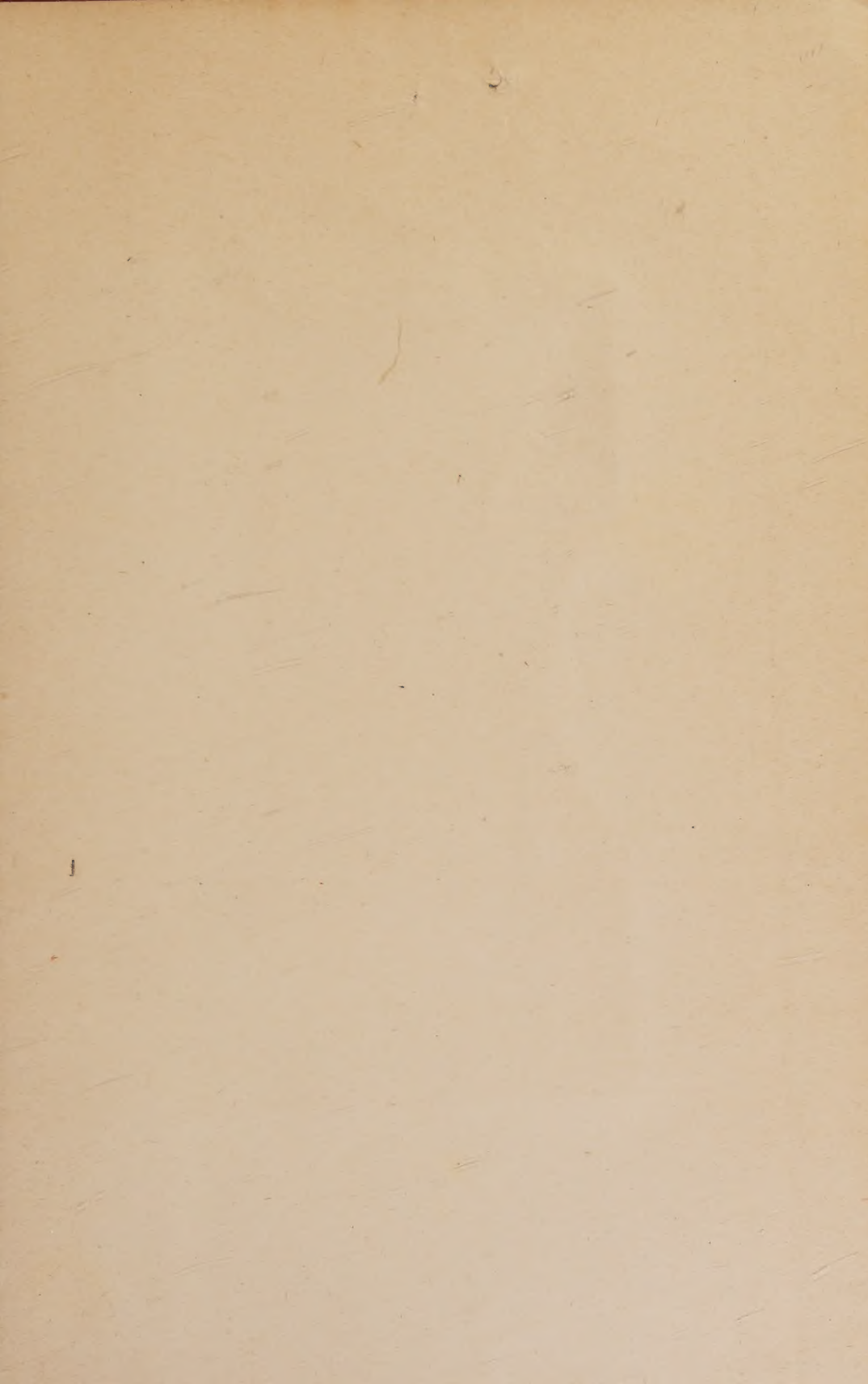
The volumes of all streams in the Yukon Territory vary a great deal with the seasons. We have flood time, high water, mean water, below mean and low water. The flood time of the main tributaries of the Yukon river is during the latter part of the month of May and the beginning of the month of June, while the flood time of the Yukon river itself is during the second week of the month of June. The small gold-bearing tributaries have their flood time during the month of May.

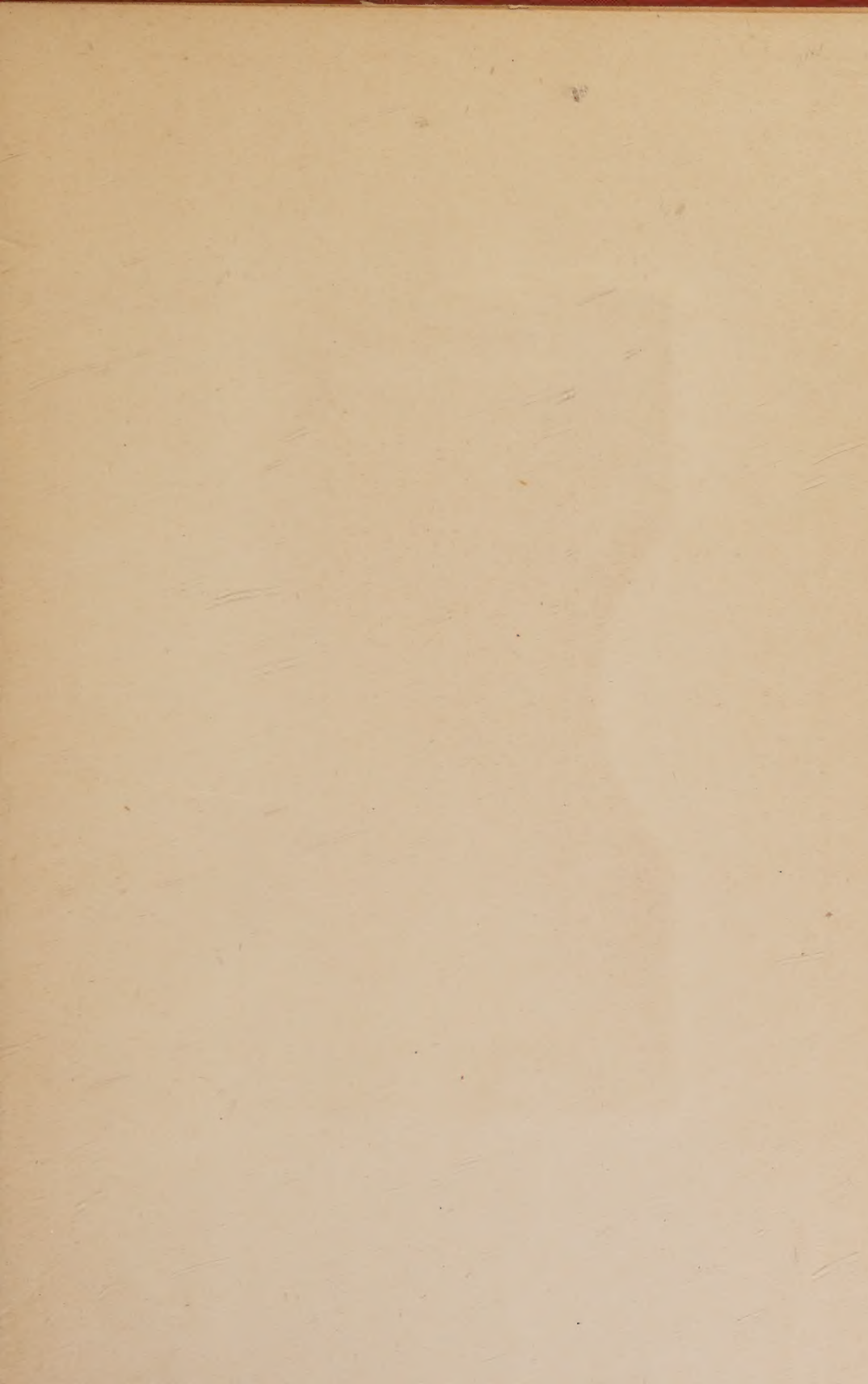
The reader will find in the accompanying table the approximate volumes of the principal streams, including the gold-bearing tributaries, in the Yukon Territory, as measured by the Government mining engineer.

VOLUMES OF STREAMS.

District and Stream.	Volumes in Miners' Inches.	Remarks.
<i>Dawson District.</i>		
Klondike River	55,000-300,000	
Bonanza Creek	68-17,641	
Eldorado "	820	Above mean.
Hunker "	156	Low water.
Bear "	65	
Dominion "	400	Mean water.
Sulphur "	300	"
Gold Run "	120	Below mean.
Rock "	1,800	Low water.
12-Mile River	20,000	Above mean.
Little 12 Mile River	2,000	Low water.
Tombstone "	5,500	"
<i>Stewart District.</i>		
Stewart River	1,100,000	Mean water.
Mayo "	125,000	High water.
Duncan Creek.	10,000	"
<i>Conrad District.</i>		
Montana River	3,600	"
Pooley Canyon.	3,000	"

The streams in the Conrad district are torrential during the months of June and July. These streams are practically dry during the winter.







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